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The Conference Board

Report Number 960

North America: The New Competitive Space

- *United States, Canada and Mexico are evolving toward a single "North American Competitive Space"*
- *Trade and investment in region will increase*
- *New trade agreement would accelerate integration*
- *Market forces may lead to greater policy coordination*
- *North American economic integration has important implications for business strategy*

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North America: The New Competitive Space

by Charles R. Taylor

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From the President

The U.S.-Canada Free Trade Agreement signed in 1988 established the first precedent for broad, formal trade and investment liberalization within North America, and, indeed, within the West. Negotiations between the United States and Mexico, joined by Canada, to eliminate tariffs and to open markets, create the prospect for a new North American Competitive Space that could change, fundamentally, the dynamic character of the region and have a lasting effect on the global competitiveness of North American business.

The Conference Board is pleased to have joined The Conference Board of Canada in preparing this report which summarizes the status of regional trade relationships and identifies key issues for business strategy. It is not a detailed study of these possible gains and losses, nor does it estimate the effect of greater regional integration on the economic performance of the countries involved. Rather, it is intended to provide a general framework for thinking about the evolution of a wider market within North America and assessing the impact of this market on business thinking.

The rules governing trade and investment are not static; they change, not only in response to formal initiatives among countries, but also as a consequence of the trend toward freer markets and deregulation within individual countries themselves. Greater economic integration in North America is likely by virtue of the opportunities it offers and the progress already achieved in reducing barriers to trade and investment. The question is, exactly how, and in what form, further integration will come about.

We wish to acknowledge Gail Fosler, Chief Economist and Executive Director, Economics Program, The Conference Board, and Charles Barrett, Vice President, Business Research, The Conference Board of Canada, for their cooperation and contributions as the project directors of this report. This will be the first in a series of research reports to discuss business opportunities and economic performance within the new North American Competitive Space. Others will appear in the months ahead, as events unfold.

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Executive Summary

Global competition and the growing importance of trade are powerful forces driving the economies of the United States, Canada and Mexico toward substantial integration. The three countries have broadly similar political and economic institutions, yet their economies are strikingly different. Canada and the United States are highly developed compared with their southern neighbor, and have substantially higher general income and education levels. Cross border trade and investment flows have increased rapidly during the 1980s, in part because of the opportunities for firms throughout the region to reduce costs by combining capital and skilled labor from the United States and Canada with relatively less skilled, but far less costly, labor from Mexico. Still, protectionist concerns and greater regional integration in Europe prompted the U.S. and Canada to enter into a Free Trade Agreement in 1988. A similar agreement is now under consideration between the United States and Mexico.

The U.S.-Canada FTA removed all tariff and most non-tariff barriers between the two countries. Tariffs will be fully phased out by 1998. Preparations for negotiations between Mexico and the United States are well advanced. They could start and end this year and an agreement might be enacted by 1992. Sensitive areas include agriculture, textiles and energy. Canada may be involved in the negotiations, though to what extent is not yet clear.

The collapse of the GATT Uruguay Round of trade negotiations last December is only likely to increase the pressure for closer economic ties within the region. Just how quickly or how completely natural and institutional forces will dissolve the national boundaries that subdivide the continent is unclear. But it does seem certain that the regional economy will gradually evolve into a single "North American Competitive Space."

Regional integration could take many paths. However, there are three main "futures" which define the range of issues business will face as trade and investment ties intensify within the region.

- The formal negotiations between the United States and Mexico are aborted (due to U.S. congressional opposition). In that case, regional integration will continue to be driven by the commercial interests of individual firms and industries.
- Mexico joins the United States, and possibly Canada, in a free trade agreement resembling the U.S.-Canada FTA. It may or may not exceed it in scope, depending on which sectors are exempted.
- In addition to Mexican participation in a free trade arrangement, there is further policy coordination. One possibility is that the peso is stabilized against the U.S. and Canadian dollars. Liberal trading and investment arrangements may be extended to include other countries. Or, perhaps least likely, a customs union could be negotiated whereby Mexico, Canada, and the United States would have the same external tariffs.

Trade and investment should continue to grow regardless of which future comes about. With Mexico's unilateral cut in tariffs to levels consistent with Canadian levels prior to the FTA, tariffs are generally not a significant barrier to trade. Still, there is a danger of selective protectionist backsliding in the absence of an agreement.

The most important consequence of a new Free Trade Agreement is the right to establish and compete in markets now protected by nontariff barriers. This would accelerate the pace of regional integration. The most immediate and direct impact to the United States would probably occur in regions with lower wage workers. But the net effect on the U.S. economy is likely to be less significant than that of the U.S.-Canada FTA. Longer term, the dynamic effect of increased competition will lead to investment decisions that use the regional resources more efficiently and improve growth and lower inflation for the region as a whole.

If policy coordination goes further, trade and investment flows should accelerate rapidly. For example, if exchange rates are stabilized and inflation rates converge, currency risk would diminish, making it easier for companies to predict prices and profits. Moreover, lower currency risk and higher investment will reduce the cost of capital to Mexican firms.

While the three "futures" will affect differently the speed and completeness of a North American Competitive Space in the near term, much will remain unaffected by the course of formal negotiations: (1) the U.S.-Canada FTA is likely to be fully implemented; (2) significant harmonization of social systems is unlikely; and (3) tax policies are unlikely to converge in a formal sense, although competitive pressures may bring effective tax rates closer.

In all of these ways, businessmen operating in the North American competitive space are likely to face costs and inconveniences that their European counterparts do not. Even so, North American businessmen—in some ways—are better positioned. For example, they have similar accounting and industrial standards in the three economies, increasingly similar tastes, and an increasingly well-integrated infrastructure.

The Implications for Business

The strategic implications of rapid regional integration will be far-reaching:

- Business will have to rethink the definition of "domestic market." Effective competition may appear anywhere in the region and challenge established positions in home markets. More region-wide intelligence will be needed.
- Canadian and U.S. firms will have to take Mexico's dynamism directly into account in their planning, and many will have to accelerate sales growth to maintain or increase share in their more broadly defined "domestic" market.
- Regional markets are presently losing their national character as they cross national borders. As a result, strategic business units will become "border blind" with respect to basic production, distribution and marketing decisions.
- There will be new business opportunities. For example, the upgrading of Mexico's infrastructure should benefit U.S. and Canadian engineering and construction companies, and banks and other financial services should benefit from rights of establishment throughout the region.
- Firms based outside the region will not ignore the efficiency and market advantages of greater integration. The challenge for U.S. and Canadian firms will be to use their improved access and geographic proximity to preempt investment by third countries in Mexico.
- Greater regional integration will lower the cost of capital to Mexican firms. And, as Mexican capital markets develop, the range of financing options will broaden. Financial strategies for many Mexican firms will need reappraisal.
- U.S. and Canadian firms that have invested in Mexico expecting that high tariff barriers would keep out other foreign competition must redeploy their assets, if they have not already been hurt by Mexico's trade liberalization.

Regional integration is a force for the future. What is at issue is how fast and broadly integration proceeds. At some point, the combination of new competitive pressures and new regional opportunities will drive chief executives to redefine the nature of their businesses. Those that recognize this early on are more likely to succeed in the new North American Competitive Space.

Introduction

The United States, Canada and Mexico together span a continent of more than 7.8 million square miles, with many climates and abundant natural resources, and a total of 350 million people who produce a combined gross national product (GNP) of nearly $6 trillion. While it is true that they have been divided by differences of culture and language, together they share a history of colonization that has led to independence and democracy, similar political systems and, increasingly, economic institutions that have fostered commercial links among the three over the years.

Yet, in many ways, their economies are strikingly different. Canada and the United States are highly developed compared with their southern neighbor, and have substantially higher general income and education levels. They have a better developed infrastructure, and their economic activity is more concentrated in services than is Mexico.

This has been the pattern for the past century. Now it seems powerful forces are at work, moving the three economies toward substantial integration. The volume of cross-border trade and investment flows rose during the 1980s, and increased in sophistication and complexity. Toward the end of the decade, the United States and Canada entered into a Free Trade Agreement (FTA). A similar agreement is now under consideration between the United States and Mexico. Just how quickly it will emerge is unclear. **Chart 1** (page 10) summarizes the current demographic and economic characteristics of the continent. In time, this continental economy should evolve into—what might be termed from a business perspective—a single "North American Competitive Space."

With a U.S.-Mexico FTA in sight, it is timely to consider what this space may comprise, how it might come about, and some of its implications for business. Greater regional integration will have a significant effect on the competitive environment in the region and beyond. The experience of the 1980s in North America, and elsewhere, suggests that trading relationships among nations change either formally as a result of negotiated agreements, or informally as a consequence of economic self-interest. They do not stand still.

This report provides a succinct overview of the forces at work in the process of North American economic integration, and looks at three "futures" which serve to illustrate the main issues at stake:

- First, U.S.-Mexico negotiations are aborted and economic integration follows an ad hoc course, based on individual business and sector interests;
- Second, Mexico joins the United States and Canada in a free trade area in due course; and
- Third, a further coordination of other economic policies, such as labor, fiscal, monetary and exchange rate policies, evolves.

It is impossible to predict which of the three "futures" will come about. It *is* possible that there will be a mix of the three; for example, Mexico might take steps to stabilize the exchange rate of the peso with the U.S. dollar. However, there could also be no free trade agreement—a mixture of "futures" one and three. But none of the substantive issues are lost by focusing just on the three futures themselves.

Of the three, the one in which the United States and Mexico negotiate a FTA that includes parallel treatment for Canada seems the most likely. There are, however, many forces that could disrupt the negotiations, or the legislatures of the signatory countries could fail to ratify an agreement. So the first future is still quite possible. Least likely is the prospect of fuller economic integration in the near future.

After exploring the forces behind integration more fully, this report provides a detailed description of the three possible "futures" of a North American free trade agreement, and their different economic consequences. It concludes with a section on implications for business strategy.

Chart 1 The North American Economies, 1989

Demographics

	United States	Mexico	Canada	North America
Population, mil.	249.4	84.3	26.2	359.9
Growth Rate (%, annual avg. 1980s)	1.0	3.2	1.0	1.5
Age Distribution (% of Total) (1)				
0 - 19	32.4	54.4	30.8	37.4
20 - 44	36.9	31.4	40.5	35.9
45+	30.7	14.2	28.7	26.7

Economic

	United States	Mexico	Canada	North America
GNP/GDP (U.S.$, bil.)	5,324	147	529	5,910
GNP/GDP per Capita (U.S.$) (2)	20,986	2,389	20,186	16,572
Inflation Rate (annual % change)	4.8	20.0	5.0	5.3
Real Growth Rate (%, annual avg.)				
1980s	3.3	0.5	3.3	3.2
1990-91	0.7	2.8	0.4	0.7
Sector Share of Output (% of total) (3)				
Agriculture	2.1	9.0	3.1	2.4
Mining	1.9	3.9	6.0	2.3
Industry	32.8	31.6	30.6	32.6
Services (incl. govt.)	63.2	55.5	60.3	62.7

Employment, Productivity & Infrastructure

Employment & Productivity	United States	Mexico	Canada	North America
Employment Growth Rate (%, annual avg. 1980s)	1.8	3.2	1.5	2.0
Manufacturing Wage (U.S.$ per hour)	14.30	2.30	14.70	12.10
Productivity Growth (GNP/employment) (4)	0.5	1.6	1.0	0.6
Infrastructure				
Total Land Area (million sq. miles)	3.5	0.7	3.6	7.8
Miles of Paved Highway (per 1000 sq. miles)	1118	54	44	530
Miles of Railroad (per 1000 sq. miles) (5)	47	17	14	29

Sources: IMF International Financial Statistics, OECD Economic Survey for Canada and the U.S., World Bank World Development Report 1990, ILO Yearbook of Labor Statistics, U.S. State Department, Economic Trends Report, Mexico 1990.

Notes:
(1) Mexican and U.S. data are from 1980 census, Canadian data are from 1986.
(2) 1989 GDP per capita in current U.S.$.
(3) U.S. data for 1987 in current dollars, Canada data for 1988 at current factor cost.
(4) Mexican figure is an average for 1981-1987. North American total is a weighted average based on GNP/GDP.
(5) 1.435-meter standard gauge railway.

Methodology for North American aggregate data: Simple sums and averages are used for aggregate data for North America where appropriate. When aggregate measures would be affected by the size of the economy or the population, weighted averages are used.

The Forces for Integration

The historical forces for integration in North America are partly those which have been driving world trade growth for the past 50 years, and partly those inherent in the proximity and competitive advantages of enterprises within the United States, Canada and Mexico.

Since the Second World War, world trade has grown at roughly twice the rate of world GNP, and trade between the three countries is no exception. In many industries, the advantages of creating larger firms or markets that straddled national boundaries outweighed the additional associated costs. These advantages came from: economies of scale within enterprises; the profitability of rolling out products in a series of dynamic national market situations; and the ability, in more recent years, of international enterprises to take innovations in product design, management and service developed in one national market, and apply them to others.

The international division of labor and pattern of trade and investment have grown exceedingly complex; in part, because modern information and communications technology has made it possible. Much trade now occurs between different divisions of the same company. Much is in intermediate goods. Old notions of national comparative advantage count for less than in the past.

Formal Trade Agreements

Also important has been the General Agreement on Tariffs and Trade (GATT), which was established at the end of the Second World War. Under the GATT, a series of multilateral trade negotiations achieved a gradual reduction in the level of tariff and non-tariff barriers to trade among member countries. Canada and the United States were early supporters and signatories of the GATT. Until the mid-1980s, Mexico was not a member and relied on a strategy of import substitution that tended, if anything, to inhibit trade.

During the 1960s, the opportunities for trade within North America led to additional formal arrangements outside of GATT. Most prominent among these was the Auto Pact that the U.S. and Canadian governments signed in 1965. The pact was designed to ensure Canadian worker participation in U.S. auto production in exchange for freer market access for finished U.S. vehicles in Canada.

Just a year later, in 1966, the U.S. and Mexican governments established the Maquiladora scheme, whereby U.S. manufacturers could set up facilities in bond in northern Mexico, to use imported parts, assemble them and re-export them to the United States. Subsequently, the scheme was broadened in 1972 to cover all of Mexico. In this way, U.S. manufacturers could take advantage of relatively low Mexican labor costs and at the same time avoid paying any Mexican import or export duties.

Natural Forces

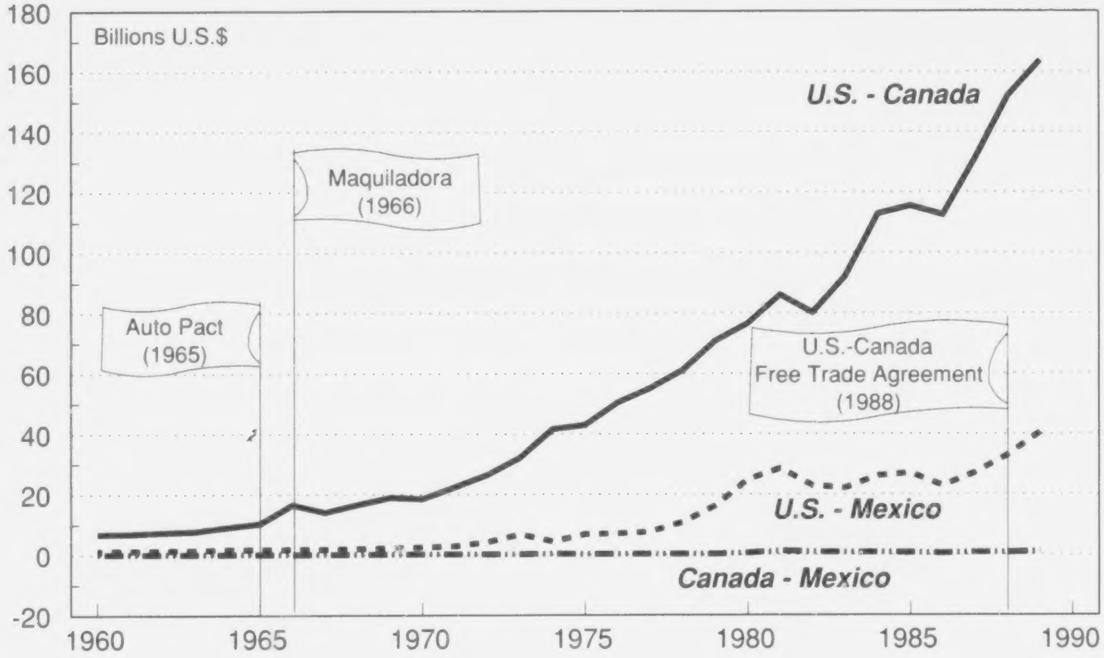
Aside from these agreements, the integration of the three national economies was, primarily, the result of natural forces rather than the institutional forces of formal arrangements. **Chart 2** (page 12) shows the growth of trade among the three countries.

In the 1980s, however, conditions changed. Canadian manufacturers, who were increasingly dependent on access to U.S. markets, became apprehensive about rising protectionist sentiment in the United States that might affect two thirds of their trade. This came to a head when the *Omnibus Trade Act* of 1986 was under consideration in U.S. Congress. Even though legislation was not particularly restrictive, the Canadian government concluded it was urgent to strengthen access to U.S. markets.

When trade discussions were initiated, the U.S. Administration was quite receptive. It had a strong commitment to trade liberalization and there had been relatively few trade frictions with Canada. Moreover, some U.S. industries wanted improved access to the Canadian market. Discussions began in earnest in 1986 and the U.S.-Canada FTA was signed early in 1988. Meanwhile, as a result of a drop in oil prices and an eruption of the debt crisis, the growth of the Mexican

Chart 2

Growth in North American Trade (1960-1989)



Source: IMF Direction of Trade Statistics Yearbook, various years.

economy came to a halt in the early 1980s. After increases in GNP that averaged more than 8 percent a year for the previous four years, the economy stagnated in 1982 and contracted by 4.2 percent in 1983.

There followed a difficult period when the entire direction of Mexican economic policy was reoriented. The Mexican government gave up its reliance on import-substitution and state-owned enterprises, and turned instead toward private enterprise and exports. In 1985, Mexico began to lower several of its trade barriers unilaterally. Its average, effective tariff rates (i.e., the average protection tariffs provided to Mexican industries as opposed to Mexican goods) fell from nearly 30 percent to around 10 percent three years later. In 1986, Mexico acceded to the GATT and undertook to observe its principles of non-discrimination, progressive liberalization and dispute settlement. **Chart 3** shows how average tariffs in Canada, the United States and Mexico have fallen during the decade—especially in Mexico.

When Carlos Salinas de Gotari became president in 1988, the pace of reform accelerated. His administration reformed and privatized the banking system, freed foreign exchange, accelerated the pace of privatization, and cut public sector deficits. By the time he met President George Bush in June of 1990, he had negotiated a series of sector agreements with the United States. It was natural, then, that Mexico should seek a formal treaty for free bilateral trade as an opportunity to lock in the reforms it had instituted. **Chart 4** (page 14) chronicles the history of Canadian and Mexican trade negotiations with the United States since 1965.

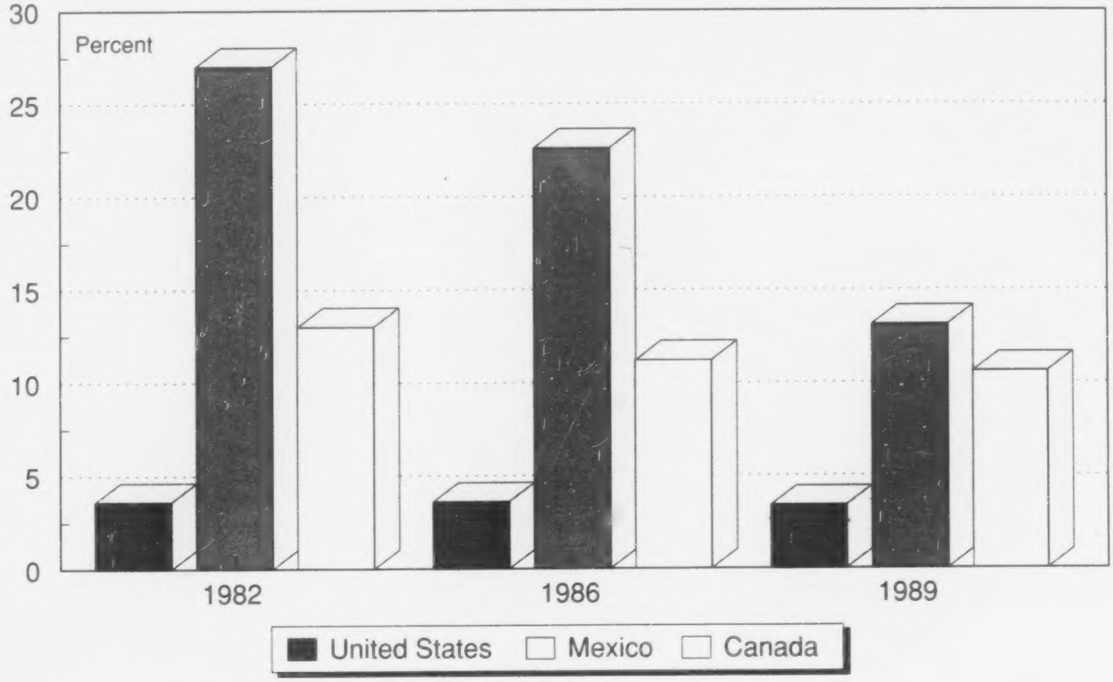
Since then, the GATT Uruguay Round has floundered. Whether or not it is revived, Mexico's GATT membership must now seem a less reliable guarantee of further access for its exports to industrial country markets in general. Therefore, in addition to locking in recent economic reforms, the urgency of providing its manufacturers with U.S. market access—more than 30 percent of Mexican exports are manufactured goods—has increased.

Just as the Reagan Administration had been receptive to Canadian government initiatives, the Bush Administration was similarly receptive when Mexican authorities first broached the idea of a free trade agreement.

The administration had been impressed by the pace and determination of Mexican reforms and was looking

Chart 3

Average Tariffs in North America



Source: U.S. Department of Commerce, International Trade Administration, U.S. International Trade Commission, Mexican Foreign Ministry, Statistics Canada.

for a vehicle to provide support—but was constrained by its own budgetary situation. A free trade agreement cleared the way to provide support without incurring additional budget costs. Moreover, they felt that improving Mexican economic prospects might reduce the pressure of migration from the South, which had been a high profile policy issue between the two governments for some time. By 1988, an estimated one million Mexicans illegally resided in the United States.

Emerging Trade Blocs

When they looked further afield, U.S. officials saw evidence of increasing regionalism in Europe and the Pacific Rim. Because of its EC-1992 initiative to create a single economic "space," the Community had enjoyed a noticeable rise in investment and growth, as businesses sought to take advantage of prospective economies of scale in marketing and manufacturing. Japanese investment in its neighboring countries was having a similar stimulative effect in Asia.

All three North American governments oppose this global trend to regionalism, which carries with it the risk of greater barriers to trade and investment between the regions. The United States has countered this tendency through its efforts to ensure open access for its services and products in all regions. Together with Canada and several other nations, it also joined the Asia-Pacific Economic Cooperation Organization in an effort that cut across the regional divisions on either side of the Pacific. The Organization was set up three years ago as a result of an Australian initiative to explore ways to establish better economic relationships throughout the Pacific.

Any new trade agreement in North America will probably be crafted to conform with GATT Article XXIV, which permits regional trading arrangements. The U.S.-Canada FTA passed that test.

Still, it does appear that a tripartite world is emerging—dominated by Europe, North America and a regional group clustered informally around Japan. Indeed, trade has grown more rapidly within, rather than among, the three regions. **Chart 5** (page 15) compares the relative size and dynamism of the economies of North America, the region around Japan, and the European Community. Therefore, it may be

Chart 4

Chronology of U.S. Regional Trade Negotiations

1965
- U.S.-Canada Auto Pact signed.

1966
- Mexican Border Industrialization (Maquiladora) Plan instituted.

1985
- U.S. & Mexico negotiate Understanding on Subsidies and Countervailing Duties.
- Mexico begins unilateral program of tariff liberalization.
- Reagan and Mulroney set timetable to reduce barriers to U.S.-Canada trade.

1986
- Reagan and de la Madrid agree to open talks on U.S.-Mexico trade and investment.
- Mexico joins the GATT.

1987
- Mexico signs GATT codes on standards, licensing, customs valuation and subsidies.
- Reagan notifies U.S. Congress of intent to sign U.S.-Canada free trade agreement.
- U.S. & Mexico sign Agreement to set up dispute mechanism for trade in textiles, steel, electronics, and farm products.
- U.S. & Mexico negotiate Understandings on Subsidies and Trade, and Investment Framework.
- U.S. & Mexico negotiate Understandings on Textiles, Steel, and Alcoholic Beverages.
- U.S.-Canada FTA Treaty finalized.

1988
- U.S.-Canada FTA Treaty signed.
- U.S.-Mexico Textiles Agreement signed.
- U.S. & Mexico sign Understandings on Steel and Beverages.
- U.S.-Canada FTA clears U.S. Congress.

1989
- U.S.-Canada FTA goes into effect.
- U.S.-Mexico Framework Agreement signed.
- Mexican Foreign Investment Decree goes into effect, allowing 100 percent foreign ownership of firms in most sectors.
- Bush and Salinas de Gotari sign agreements providing for talks on U.S.-Mexico trade and investment. Other accords were signed to strengthen bilateral efforts to increase cooperation on environmental issues.

1990
- U.S.-Mexico diplomatic notes exchanged to facilitate enforcement of tax laws.
- Canada-Mexico Framework Agreement signed, formalizing ten bilateral accords.
- Bush and Salinas meet in Washington to set groundwork for sweeping U.S.-Mexico trade and investment treaty.
- Trade Minister Crosbie announces Canada's intention to participate in U.S.-Mexico free trade negotiations.
- Bush-Salinas de Gotari summit at Monterey, Mexico.

Chart 5

The Main Economic Features of the Triad, 1989

Population	North America	European Community	Asia (1)
Population (millions)	359.9	325.5	504.9
Growth Rate (%)	1.3	0.3	1.6
GNP / GDP			
GNP/GDP (U.S.$, billions)	5,910	4,819	3,514
Real GNP/GDP Growth (%, annual avg. 1980-89)	3.3	2.1	4.3
GNP/GDP per capita (U.S.$)	16,420	14,800	6,958
Employment			
Employment Growth (%, annual avg. 1981-89) (2)	2.0	0.5	3.5
Manufacturing Compensation Rate **(U.S.$ per hour) (3), (4)**			
Average	12.10	11.50	5.10
High	14.70	17.60	12.60
Low	2.30	2.80	2.80

Sources:

IMF International Financial Statistics 1990; The World Competitiveness Report, 1990; U.S. Department of Labor; Bureau of Labor Statistics; and The Conference Board.

Note:

(1) *Asia includes Japan, Taiwan, Hong Kong, Korea, Singapore, Thailand, Philippines, Indonesia, and Malaysia.*
(2) *Asian data excludes Philippines.*
(3) *Data for Asia excludes Indonesia, Malaysia, Thailand, and Philippines. Averages for all are simple averages.*
(4) *North American compensation rate is weighted relative to civilian employment in each country.*

advantageous for the United States, Canada and Mexico to try to establish more firmly the North American third of this "triad." The combination of U.S. and Canadian capital, highly skilled labor, natural resources, and advanced technology with Mexico's relatively low cost, abundant labor and growing consumer market should create major opportunities for all countries.

Chart 6 (page 16) shows the costs of labor and capital in Canada, the United States and Mexico. While average wage differentials reflect differences in average productivity as well as the mix of jobs, there are clearly large cost advantages for Mexican labor. Moreover, the cost of Mexican equity capital is surprisingly low considering that Mexican stock prices have risen so rapidly. As a result, the price-earnings ratios among the three countries are remarkably similar. Unfortunately, most Mexican firms do not have access to the stock market; furthermore, due to high real interest rates, capital is much more costly than in Canada and the United States.

Chart 6

The Cost of Labor and Capital in North America

Hourly Compensation for Selected Industries, *(U.S.$)*

Selected Industries (1)	**United States**	**Mexico**	**Canada**
Textiles	9.74	1.45	11.23
Chemicals	18.19	1.49	15.51
Rubber / Tires	21.48	5.13	NA
Primary Metals	18.79	1.82	19.85
Electrical / Electronics	14.31	1.19	13.99
Autos	21.51	2.45	17.74
Hourly Compensation Average	14.31	2.32	14.72

Cost of Capital (2)

Selected Interest Rates (%)	**United States**	**Mexico**	**Canada**
Commercial Paper	9.0	47.3	12.4
Prime Rate	10.5	NA	13.5
Long-Term Government Bonds (3)	8.6	45.2	9.9
Real Interest Rates (%)			
Commercial Paper	4.2	27.3	7.4
Prime Rate	5.9	NA	8.5
Long-Term Government Bonds	3.8	25.2	4.9
Equity			
Price / Earnings Ratio	13.1	10.4	16.3

Sources:

Banamex Review of the Economic Situation in Mexico. OECD Main Economic Indicators (1990). U.S. Department of Labor Statistics, Bureau of Labor Statistics, office of Productivity and Technology, "Hourly Compensation Costs for Production Workers in Manufacturing Industries, 1975-1988" Mexico, U.S., and Canada. U.S. Department of Labor, "Overview of Mexican Labor Market, 1990." Morgan Stanley Capital International "Monthly Statistics on International Capital Markets."

Note:

(1) *All wage data for selected industries are from 1987.*
(2) *Unless indicated otherwise, rates are averages for 1989.*
(3) *Unless indicated otherwise, rates are averages for 1989.*

NA = not available or not applicable.

Three Economic "Futures"

The U.S.-Canada FTA is the first formal agreement on the road to greater regional integration. It removed several non-tariff barriers to trade, including many discriminatory government procurement practices. Service sector firms, including financial services firms, now have the right of establishment and national treatment across the border. A precedent setting dispute settlement procedure is in place which, in effect, means that both countries have relinquished a degree of their national sovereignty in trade matters to an international arbitration mechanism. However, all tariffs will not be eliminated until 1998. And the two countries are still negotiating remaining government procurement and subsidy issues that are not scheduled to be resolved until the mid-1990s. The course of those discussions is uncertain; trade liberalization and economic integration are long-term processes.

The formal negotiations for a U.S.-Mexico FTA could begin as early as May 1991. The U.S. Administration has a "fast-track" approval process to speed up congressional review and prevent amendment of the international economic agreements and treaties. This should be extended by Congress before mid-year. There are many paths that integration of the North American economy may follow. At this juncture, however, it is reasonable to consider three economic "futures," which capture the main issues at stake: (1) the U.S.-Mexico talks fail; (2) Mexico joins in a free trade arrangement; and (3) regional integration progresses rapidly.

The U.S.-Mexico Talks Fail

There is a real possibility that U.S.-Mexico talks could fail or be indefinitely postponed. Economic integration would then follow an ad hoc course over the next few years, as businesses seek opportunities for trade and investment individually, under rules that are substantially the same as those which currently apply.

This "future" depends, to a great extent, on events in Washington. The Uruguay Round of GATT could be revived, which would supersede the U.S.-Mexico negotiation as a first priority and may also reduce the urgency of a free trade agreement for Mexico. Or, other matters could push the talks off the U.S. Administration's agenda. Either way, valuable momentum—which would be difficult, if not impossible, to recover—would be lost.

Perhaps more likely would be U.S. Congressional opposition to extend fast-track approval or, once it is negotiated, to enact any trade agreement, especially if the United States is mired in a recession. Because of the substantial labor cost differences between the two countries, some low-wage workers in the United States are likely to lose their jobs. For those congressional districts with a large, traditional manufacturing sector, the initial adverse effects could be significant. Moreover, unlike the U.S.-Canada FTA, the U.S.-Mexico agreement has been widely heralded early on, so that many labor and business groups who feel at risk might mobilize quickly and decisively against it in Congress.

Mexico Joins in a Free Trade Agreement

Despite these obstacles, the proximity of the two countries and their changing economic and political relationship argue for closer formal economic ties. Assuming there is a relative, if not absolute, decline in the importance of multilateral trade arrangements, the international and geopolitical arguments for a U.S.-Mexico FTA are compelling.

It is possible that U.S.-Mexico negotiations could be completed quickly in order to meet the U.S. objective of Congressional approval before the end of Bush's first term in 1992. The general structure of a U.S.-Mexico agreement could resemble that of the U.S.-Canada FTA—first, dealing with rules of origin, border measures, national treatment, technical standards and specific sector issues; and then with government procurement, services trade, and the institutional provisions for enforcing the agreement. **Chart 7** (pages 18-19) summarizes the main features of the U.S.-Canada FTA. Like the U.S.-Canada

Chart 7

The Main Features of the United States-Canada Free Trade Agreement

General Provisions:

(1) All tariffs to be eliminated immediately, or in equal annual reductions over five to ten years.

(2) Some non-tariff barriers to trade in agricultural products to be removed.

(3) Both countries to retain the right to use to anti-dumping and countervailing duties against injurious subsidies or discriminatory pricing.

(4) Further negotiation on government procurement to be undertaken not more than one year after renegotiation of the GATT Codes.

Specific Actions and Timetable

January 1, 1989

The Trade Agreement and its rules covering such issues as procurement, services and investment and border measures came into effect after both countries exchanged Instruments of Ratification. The first round of tariff reductions began, affecting about 15 percent of all goods traded between the two countries including:

- Computer and related equipment
- Some unprocessed fish
- Unwrought aluminum
- Vending machines and parts
- Airbrakes for railroad cars
- Some paper-making machinery
- Some pork
- Fur & fur garments
- Yeast
- Ferro alloys
- Skis
- Warranty repairs
- Leather
- Whiskey
- Animal feeds
- Needles
- Skates
- Motorcycles

Both nations ended U.S. export subsidies for agricultural products. The Canadian government started to remove its embargo on used U.S. vehicles. Cars more than eight years old could enter into Canada duty-free immediately; the age limit drops two years every 12 months until 1994. The embargo on used aircraft imports was lifted. Buy-Canadian and buy-American government procurement policies were eased.

U.S. uranium enrichment restrictions were ended.

The Canadian government began to phase out the differential markup on U.S. wine and removed it entirely on U.S. distilled liquor.

The Canadian government raised its threshold on U.S. takeovers of Canadian companies so that it would only review the takeover of companies worth more than $25 million, up from the previous $5 million. For indirect takeovers, the threshold was raised to $100 million, up from $50 million.

October 1, 1989

The Canadian government began to lift tariffs on U.S. exports of specialty steel products.

January 1, 1990

Tariffs dropped another fifth or tenth depending on the schedule.

January 1, 1991

The threshold for Canadian government review of U.S. direct investment takeovers rose to $100 million and, for indirect takeovers, to $500 million. Tariffs continued to drop; the 35 percent U.S. duty on Canadian shakes and shingles was removed.

January 1, 1992

The threshold for Canadian direct investment review rises to $150 million; indirect takeovers will no longer be scrutinized. Tariff cuts continue.

January 1, 1993

Tariffs will be lifted on another 35 percent of dutiable goods, including:

- Paper and paper products
- Telecommunications equipment
- Aftermarket auto parts
- Chemicals including resins (excluding drugs and cosmetics)
- Subway cars
- Paints
- Hardwood plywood
- Some meats (including lamb)
- Printed matter
- Furniture
- Explosives
- Most machinery

January 1, 1994

U.S. customs user fees and duty drawbacks in other countries will end. U.S. foreign trade zone provisions will change to Canada's benefit. New regimes on countervailing and anti-dumping duties should come into effect.

January 1, 1995

Tariffs take another drop.

January 1, 1996

There will be another tariff cut. This is the final deadline for Canada and the U.S. to agree on new trade remedy rules. Production-based duty waivers in the auto industry will end.

January 1, 1997

Another tariff reduction.

January 1, 1998

Tariffs will have ended on remaining goods:

- Most agricultural products
- Softwood plywood
- Textiles and apparel
- Steel
- Appliances
- Pleasure craft
- Tires
- Beef
- Rail cars

Source: Department of External Affairs, The Canada-U.S. Free Trade Agreement: Synopsis, Canada, 1987

FTA, a U.S.-Mexico agreement is also likely to be phased in over a 10-year period.

Even with the greater differences in economic structures, there is little point in prolonging adjustment beyond the lifetime of most products. However, it is not clear whether the scope will become broader or narrower. Due to Mexican constitutional restrictions on foreign involvement in energy, that sector may be excluded. Equally, U.S. sensitivity about trade in textiles and agricultural products like sugar, may mean that they will be exempted from any agreement.

A bilateral negotiation between the United States and Mexico raises the issue of equivalent treatment for Canada. The Canadian government is seeking a place at the negotiating table that the U.S. and Mexican governments seem well disposed to allow, if an appropriate procedure can be established. It has even been suggested that the U.S., Mexican and Canadian governments may hold trilateral negotiations to establish a single North American FTA. The core of the U.S.-Canada agreement could be used, or a more wide-ranging agreement might be sought.

In practice, however, the U.S. government might not wish to engage in trilateral negotiations for two reasons: U.S. involvement in such overtly regional trading arrangements might provoke greater regionalism in Europe and the Pacific Rim. More important, it might prolong the negotiation process, and risk not enacting an agreement by 1992. True, a North American agreement could be drawn up in such a way that it does not supersede the U.S.- Canada agreement or in any way threaten its implementation. It could, for example, defer to the provisions of the U.S.-Canadian Treaty whenever there were any difference in rules or procedures between the two. Nonetheless, it would be simpler for the United States and Mexico to conduct their own bilateral negotiations and let Canada conclude its own "equivalent" bilateral agreement with Mexico. In either case, Canada could achieve its objective of establishing access to Mexican markets on a par with the United States.

Regional Integration Progresses Rapidly

The third "future" assumes that, one way or another, Mexico joins Canada and the United States inside a free trading area and, in addition, the three countries take further steps to coordinate economic policy. This could happen in three ways: First, and most likely, is convergence of the three currencies. There is already a narrow trading range between the Canadian and U.S. dollars. In addition, the Mexican government may move to stabilize the peso against the U.S. and Canadian dollars, perhaps by tying it to a "basket" of industrial country currencies. This would be traumatic for the Mexican economy for the moment because inflation is so high—more than 25 percent a year. Fiscal and monetary policies would first have to be brought further into line, to normalize interest rate differences that otherwise move exchange rates. However, if the Mexican government succeeds in reducing core inflation to an annual rate of 8 percent or less, a change in the exchange rate regime might help to complete the process of inflation convergence to U.S. and Canadian rates.

Second, liberal trading and investment arrangements might be extended by including other countries in a free trade area. (Indeed, one of the clear advantages of an agreement among all three countries is that it could be drafted to allow third countries, if they met certain conditions, to accede to it.) The U.S. President's ***Initiative for the Americas*** called for a zone of freer trade in the hemisphere. In time, this may lead to an extended free trade agreement.

Third, and the least likely, is a customs union in which Mexico, Canada and the United States agree to impose the same tariffs—and, perhaps, non-tariff barriers—to trade from third countries, such as France or the United Kingdom. Any "Rules of Origin" would cease to be a factor in trade inside the region. These are rules by which the United States, for example, might specify that only part of a product which originated in Mexico (or the United States) would be exempt from import duties. Such rules are intended to stop a third country exporting to the country in the region with the lowest tariffs, and then reexporting into the rest of the region. When the external barriers are the same for all the countries in the region, rules of origin become redundant since there is no "back-door" from one national market into another. As a result, trade relationships become greatly simplified.

This is good economics, but impractical politics. It is difficult enough for a government to give up protection from a neighboring economy. To add the requirement that local industries exchange their home country protection from third countries for protection that was collectively managed, would almost certainly be asking too much. A single customs union barrier could presumably be raised or lowered only after negotiation with the two other countries, meaning much future trade policy flexibility would be lost.

What Difference Does An Agreement Make?

What are the key differences between these three "futures"? Why does it matter if a U.S.-Mexico free trade agreement is signed or not, or whether additional initiatives are taken in the near-term to coordinate policy?

As in the past, the natural forces based on relative wage costs and dynamic markets will drive integration whether or not a formal agreement to eliminate tariffs and/or open markets is reached. As long as commerce is not restricted, trade will continue to grow at about twice the rate of GNP in the region, lower value-added activities will continue to shift to Mexico, and investment will continue to flow South. The Maquiladora will probably "deepen" as the Mexican government extends the advantages of that program to cover more activities in manufacturing and services. Sooner or later, many Mexican companies will cross the border to compete in U.S. and Canadian markets.

Nonetheless, without a broad agreement, there is a danger of selective protectionist back-sliding. For example, the United States might impose restrictions on foreign firms operating under the Maquiladora scheme, arguing that they locate there only as a way of gaining preferential access to U.S. markets. Protectionist pressures in some U.S. industries might succeed in restricting trade. In all likelihood, progress toward a North American Competitive Space would be comparatively slow and uneven.

By contrast, if Mexico joins a free trade area, either with the United States alone or, in effect, including Canada as well, the pace of regional integration will accelerate. The short-term disruptions and adjustments would be greater, and the long-term benefits would accrue sooner, especially in Mexico. Certainly, more low-wage workers in U.S. and Canadian industries would lose jobs to lower paid Mexicans, and more new investment would migrate, too. At the same time, traditionally protected Mexican industry would face the full brunt of competition from Canadian and U.S. exporters. Trade with the United States and Canada would be increased and also diverted from third countries to Mexico.

On the other hand, U.S. and Canadian firms that shifted production and processes to Mexico, might cut costs enough to significantly improve their global competitiveness. It would depend on whether the advantages of lower costs and greenfield investments outweighed the costs of scrapping old plants and dealing with the logistical problems that might arise from operating over a larger geographic area. The opportunity for firms to optimize operations within the North American Competitive Space might preserve jobs, in both the United States and Canada, that would otherwise have disappeared as a result of competition from other regions. The automobile industry may be a key example.

The important point, however, is that the flows of labor and capital will not be solely the result of free trade. With Mexican tariffs now at roughly the same level as Canadian tariffs before the U.S.-Canada FTA, these tariffs are not a barrier to trade. The most important effects of a formal agreement would be to free investment and assure the right to establish and compete in markets that are now protected by non-tariff barriers in all countries—like government procurement.

A free trade agreement would also, once and for all, push outward the competitive frontier—for all sectors not exempted in the agreement. No doubt some sectors would be allowed more time to phase in the new arrangements. The general effect, however, would be not only to inhibit protectionist pressures, but to guarantee increasing access to the regional market for a broad base of sectors. In the absence of an agreement, the rate at which individual sectors could gain (or forestall) that access would be a function of their size and political muscle. Under a free trade agreement, small, dynamic and emerging industries would have the same advantage as established and mature ones.

Chart 8

Foreign Direct Investment

(billions of U.S.$)

United States	**1980**	**1987**	**1989**
Total	83.0	271.8	400.8
From Mexico	0.1	0.9	1.0
From Canada	12.2	24.0	31.5
From Rest of World	70.7	246.9	368.3
Mexico			
Total	8.5	17.3	26.6
From U.S.	6.0	4.9	16.2
From Rest of World	2.5	12.4	10.4
Canada			
Total	52.8	76.6	100.7
From U.S.	41.6	56.5	68.2
From Rest of World	11.2	20.1	32.5

Note: The foreign direct investment figures represent stock data, not net annual flows.

Sources: Survey of Current Business August 1990; U.S. Department of Commerce; Bureau of Economic Analysis; Investment Canada; SECOFI.

The dynamic effects of a free trade agreement would vary from sector to sector. In some areas, the relocation to Mexico of labor-intensive and less integrated parts of the auto and consumer electronics, agriculture, and processed food industries might well accelerate. In autos, for example, the logistics of moving parts to and from the established centers of production in Tennessee and the upper Ohio Valley could limit the amount of original equipment component production that could be relocated, due to the demands of just-in-time inventory management. Telephone companies in the United States and Canada, in addition to engineering firms—assuming Canada was a part of the new arrangement—should benefit from Mexico's program to upgrade its public sector, provided public procurement rules are covered in the agreement. Then, as Mexico upgrades its public services, firms in these sectors should be well placed to supply new plant, equipment and infrastructure, and better technology and management services for existing facilities. United States and Canadian banks should find opportunities for both merchant and retail banking, as the Mexican banking sector is liberalized and its capital markets develop.

Moreover, some U.S. and Canadian exporters of household appliances, automobiles, beverages and processed foods, should benefit from better access to a quickly growing consumer market of 84 million people. Mexicans spend an estimated 15 percent of each additional dollar they earn on products and services imported across their Northern border. Equally, U.S.

and Canadian manufacturers of computers and software should benefit from lower costs of labor and better access to the dynamic and increasingly important Mexican market—if they relocate parts of their businesses.

The impact of Mexico joining a free trade area will be felt more in some geographic regions than others. This might not be such an important factor in Mexico or Canada, although the pace of restructuring and investment could accelerate most in the North. In the United States, though, net job gains and losses for many manufacturing industries will probably be concentrated in the Midwest. The effects in the textile, agriculture, and oil extraction equipment sectors will be felt in the Southeast and Southwest regions. The Northwest should enjoy improved financial and computer hardware and software industry prospects. The Southwest, especially Texas, should gain trade in goods and services.

The Department of Labor has begun to calculate gains and losses from a possible agreement already, and the U.S. International Trade Commission will publish its own estimates. Generally, preliminary results suggest that the immediate, direct impact on U.S. industry will be less than the impact of the U.S.-Canada FTA, and that the impact will be focused on blue-collar workers rather than across many occupations and sectors. On the other hand, the effects of such an agreement on growth and inflation may be larger than the U.S.-Canada FTA. Analysis of the effects of economic integration in the EC suggests that these dynamic considerations may be more important than the immediate effects--possibly by a large margin.

Fuller economic integration would eliminate other impediments to trade and investment. For example, if exchange rates are stabilized and inflation rates converge, currency risk would diminish much as has been the case with the EMS (European Monetary System), making it easier for trading companies to predict prices and profits. That would also encourage new capital inflows, including the repatriation of more flight capital into Mexican capital markets. This could help to lower Mexico's external debt. In time, it might also remove much of the exchange rate risk premium between Mexico and U.S. real interest rates; thus, lowering the cost of capital for domestic borrowers in Mexico and encouraging the more efficient use of capital within North America as a whole. **Chart 8** (page 22) shows how direct investment has grown over the past decade among the three countries of the region.

Bringing other countries into the agreement, as suggested by the ***Initiative for the Americas***, would broaden both the benefits and the costs of a more competitive trade environment within the region. Trade within the region would still be more convenient if a customs union were established. However, GATT rules require a common external tariff equal to or lower than the lowest tariffs of the three countries for each type of good or service. That would reduce average tariffs and the consequent distortions to the pattern of trade. To the extent that business decisions and activities were not governed by the need to avoid trade and investment barriers, the efficiency, and therefore the growth of the entire region, would be enhanced.

What The Three "Futures" Have In Common

While the three "futures" would have different effects on the speed and completeness of a North American Competitive Space, there are at least four areas that may *not* be affected by a trade agreement between the United States, Mexico, and Canada.

The U.S.-Canada FTA

First, the U.S.-Canada FTA is not expected to be abrogated, even though it is currently blamed by many Canadians for their recession. This FTA constitutes the minimum of formal integration that will occur in the region.

Social Systems

Second, any significant harmonization of social systems is hardly conceivable in the next decade. Canada will remain the most welfare-oriented of the three countries, even if the United States gradually improves its provisions of social services. Mexico plans to enhance its social safety net, but its standards will remain below those in Canada and the U.S. for the foreseeable future. As a result, businesses in Mexico will probably have to supplement governmental support in important areas like pensions, health care, education, and child care, as they do now in the United States.

Immigration Pressures

Third, and in part as a result of the differences in income and government support levels, pressures for immigration from Mexico to the U.S. will remain. Although the Mexican government would like more liberal rules on labor mobility and, perhaps, the acceptance of equivalent professional standards comparable to those in the European Community, the U.S. government is sure to remain opposed. Indeed, the trend in U.S. immigration policies is toward tighter rules, with preferences based on skill, rather than on national origin or family links to U.S. citizens.

Tax Policies

Fourth, tax policies are unlikely to converge in a formal sense, although competitive pressures may bring effective tax rates closer together. Indeed, recently, Canadian and U.S. tax structures have diverged. Canada partially integrated its personal and corporate taxation during the 1980s, and recently implemented a federal Goods and Services Tax—a national value-added tax. Mexico has a 15 percent value-added tax. The U.S. Congress has debated and rejected a national value-added tax several times in the past. Personal tax rates in the three countries are similar and closer trade ties among them may rekindle U.S. interest in tax integration and in a value-added tax as pressures to "level the playing field" increase. **Chart 9** (page 26) compares the tax regimes of the three countries.

Accounting Practices

In all of these ways, business people operating in the North American competitive space are apt to face costs and inconveniences that, for example, their European counterparts will not. Even so, there are ways in which North American businesses are better positioned than their counterparts in other regions. For example, reporting requirements for auditing purposes in both Canada and Mexico conform roughly to the Financial Accounting Standards Board (FASB) in the United States. Although standards in Mexico lag somewhat, they do tend to parallel U.S. standards. However, reporting requirements for tax purposes in Mexico are different from both U.S. audit and tax reporting standards, and they are unlikely to converge.

Chart 9

A Comparison of Taxation in North America, 1990

Tax	Canada	Mexico	U.S.
Federal Corporate Income Tax	37% (basic rate) (1)	36% (max)	34%(max) 15% (min)
Provincial / State Corporate Income Tax	10-17%	NA	0-12%
Minimum Tax on Assets	NA	2%	NA
Alternative Minimum Tax	NA	NA	20%
Value-Added Tax	7% (2)	15%	NA
Provincial / State Sales Tax	6-12% (3)	NA	0-12%

Notes: (1) A preferential rate of 34 percent is extended to manufacturing and processing income.
(2) This number refers to federal Goods and Services Tax in Canada.
(3) Except for Alberta.
NA = not applicable or not available.

Sources: Price Waterhouse; Mexican Ministry of Finance.

Other Common Bonds

In addition, many industrial standards are the same in the three economies, notwithstanding the resistance in the United States to converting to metric, as Canada and Mexico have done. Tastes will no doubt continue to converge, creating greater economies of scale in consumer goods markets than in the EC. And some infrastructure is already well integrated; telephones are a case in point, even if the Mexican part of the system needs upgrading.

Mexican Dynamism

Whatever "future" unfolds, Mexico is predicted to remain the most dynamic of the three economies. It has a young and rapidly growing population. It will have a growth "dividend" to collect from economic liberalization for a while yet. It is likely to be the beneficiary of direct foreign investment on a large scale provided its economic reforms can be supplemented with social and political reforms. This represents an important source of long-term economic growth for the whole region.

The Implications for Business

The strategic implications of the pace and degree of regional economic integration are likely to be far-reaching.

North America Becomes the Market

Many businesses should rethink their definition of the "domestic market." For example, instead of thinking of their share in the U.S., Canadian or Mexican markets as a measure of strategic performance, in time, it may be more appropriate to think in terms of the share of all three national markets combined. A regional definition of market share will also become relevant for companies based outside the three countries.

Moreover, North American businesses should recognize that, in the future, competitors based anywhere in the region are likely to be as effective as competitors from their home country. This applies equally to firms which have no plans to trade across national boundaries as much as those that do. The need for intelligence on all three markets will increase.

A New Dynamic Character

In addition to a static, geographic redefinition of market, Canadian and U.S. firms in many sectors will have to take Mexico's dynamism more directly into account in their planning. On the one hand, there will be pressure to accelerate sales growth to maintain or increase share in their more broadly defined "domestic" market. On the other hand, they must anticipate that well-run Mexican competitors accustomed to high rates of growth, innovation and investment will aim to make rapid inroads in their own national markets wherever opportunities arise.

Bi-National Regions

As national borders lose their relevance, local regional markets will be defined increasingly without regard to them. For some regions this is already beginning: Ontario and Michigan form a single market for many goods and services, as do Southern California and Northwestern Mexico. These are likely to become more fully integrated to the point where it would no longer make sense to have separate business units serving customers and clients on each side of the border. The geographic boundaries defining strategic business units may have to be redefined in many companies.

New Markets for Everyone

While these issues may pose strategic problems for many firms in North America, there should be tremendous opportunities, as well. For example, Mexico needs to invest heavily in infrastructure. Canadian and U.S. engineering and construction companies should be able to win significant contracts once government procurement policies are liberalized. Conversely, Mexican firms, with their inherent cost advantages, may be able to make significant inroads into U.S. markets. For instance, Mexican producers of consumer goods will have improved access to large U.S. urban markets.

New Global Strategies

Moreover, many businesses should be able to take advantage of economic integration to expand their trade and investment within North America and to realize new efficiencies and economies of scale that will enhance their global competitiveness. Indeed, some will have little choice. They will have to seize these opportunities to survive in the face of global competition.

It would be unreasonable to expect firms based outside the region, with a stake in North American markets, to ignore the trend toward regional integration. For example, many Japanese firms have already invested in Mexico under the Maquiladora scheme, and more are likely to invest there if access to U.S. and

Canadian markets were to be better assured in the future. The challenge for U.S. and Canadian firms is to use their improved access to preempt investment in Mexico by third countries.

New Financial Strategies

Capital costs will fall for Mexican firms. Greater regional integration may lower the cost of capital to Mexican firms more than it will lower the cost of labor to U.S. and Canadian firms. Moreover, as Mexican capital markets develop, the range of financing options available to Mexican companies will no doubt broaden greatly. Financial strategies for many Mexican firms will need reappraisal.

Liberalization Requires Strategic Change

Trade liberalization means all businesses lose protection. Firms that invested in Mexico in the past expecting high tariff barriers to keep out other foreign competition must consider quickly how they want to redeploy their assets, if they have not already been hurt by Mexico's trade liberalization.

Conclusion

Regional integration is a force for the future. The U.S.-Canada Free Trade Agreement established the first precedent for broad, formal trade and investment liberalization within North America and within the hemisphere. Indeed, the U.S.-Canada Free Trade Agreement was the first clear signal that the dynamics of freer trade and investment could overcome the resistance to greater integration within the region.

Whatever the final outcome of the U.S.-Mexico negotiations, U.S. and Canadian investment in Mexico will increase as will Mexican penetration of U.S. and Canadian markets as long as overt protection is avoided. A formal agreement would provide the opportunity for all countries involved to consider the broad range of trade and investment issues at the same time; but it is by no means the only route to greater integration. The Maquiladora arrangement is an easy alternative and provides ample investment opportunities in Mexico—even though it does not address important, non-tariff barriers.

The bottom line for business is that the economic relationships between the United States and Mexico—and probably including Canada as well—are likely to change whether the new rules are negotiated formally among governments or are shaped by the self-interest of individual sectors. The result of these forces will be a broader and more dynamic regional market that will not only be an opportunity for regional business, but a target for other countries outside the region that recognize its potential. The combination of new competitive pressures and regional opportunities require businesses within the region to redefine the scope of their markets and competitive opportunities and threats. Those businesses that recognize this early will be better positioned to take advantage of, and to succeed, in the new North American Competitive Space.

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Managing Environmental Affairs

Corporate Practices in the U.S., Canada and Europe

- *Eighty-one percent of firms surveyed believe mandated environmental standards are reasonable*
- *More than 70 percent have formal systems in place to identify key environmental issues*
- *Single issue of most concern to respondents is worker health and safety*
- *Issues expected to be most significant in next five years are clean air and waste disposal*

Serving Business and Society for 75 Years

About The Conference Board

Founded in 1916, The Conference Board's twofold purpose is to improve the business enterprise system and to enhance the contribution of business to society.

To accomplish this, The Conference Board strives to be the leading global business membership organization that enables senior executives from all industries to explore and exchange ideas of impact on business policy and practices. To support this activity, The Conference Board provides a variety of forums and a professionally managed research program that identifies and reports objectively on key areas of changing management concern, opportunity and action.

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Managing Environmental Affairs: Corporate Practices in the U.S., Canada and Europe

by Catherine Morrison

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From the President

Preservation of the environment has become an issue of primary importance to our society and, therefore, of primary importance to business. Clearly the issue is global in scope. Concerns such as acid rain, global warming, and clean air know no boundaries.

This report, based on a survey of U.S., Canadian and European business executives, describes the primary environmental issues that concern these executives' companies. It looks at the priorities companies assign to these issues and the ways in which firms are taking the initiative to deal with them.

The Board would like to thank the many executives who participated in this study and who shared their insights into this most basic of societal concerns.

PRESTON TOWNLEY
President and CEO

Method

In each of The Conference Board's surveys of corporate public policy concerns, environmental issues has been one of the top priorities. At the Board's September 1989 International Industrial Conference of world business leaders, it was the subject mentioned most often at the Boardroom sessions, a key component of each conference day. At about the same time, a number of global and national environmental concerns emerged, requiring both immediate and long-term attention from public and private sector organizations.

Earlier in 1989, Board researchers surveyed 1200 companies in the United States, 1100 in EC-member European countries and 535 in Canada on a range of environmental policies and practices — 353 usable responses were received.

Company and industry-type selection was made based on the extent to which a firm's products or practices affect, or are affected by, environmental concerns and/or regulations. These businesses are:

- Agriculture
- Chemicals
- Construction
- Diversified manufacturing
- Electrical utilities
- Electrical machinery
- Fisheries
- Food products
- Gas utilities
- Mining
- Water and power
- Nuclear energy
- Paper and forest products
- Petroleum
- Plastics
- Primary metals
- Rubber
- Telecommunications
- Textile mill products
- Transportation equipment
- Waste management

In addition, interviews were conducted with those responsible for environmental affairs and related functions in business, government, conservation organizations and the wider public.

Executive Summary

The concerns are global. Environmental problems are issues for business and industrial operations in countries at various levels of industrialization—the mature capitalist countries of the West, the emerging Eastern bloc states and the lesser-developed countries. In the Third World, explosive population growth fuels the concern for diminishing resources. The recent changes in the U.S.S.R. and Eastern Europe reinforce the recognition that environmental matters can threaten internal political stability and challenge relations between neighboring countries as effectively as weak alliances and arms agreements.

In Western Europe, the European Community is moving closer to U.S. regulatory standards as the issues of environmental protection receive increased political attention. Canada is moving towards a comprehensive national "Green Plan," recognizing the heavy resource-based dependency of the Canadian economy and the increase in court challenges to industry and government activities. In the United States, House and Senate negotiators finally reached agreement on changes in clean air legislation, setting stricter standards and establishing new timetables to reduce chemical contamination in the air. Compliance could cost $25 billion a year.

Companies respond to the key issues. Corporate environmental policies are undergoing rapid, sweeping changes as companies respond to new laws, pressures from external constituents and concerns from within the firms' own management ranks. Many U.S. firms are more concerned with the vagaries of environmental regulation enforcement than with the regulations themselves. Canadian and European firms have greater confidence in, and respect for, environmental regulators than do U.S. companies.

Protection of workers' health, both in the workplace and the overall environment, is one of the key concerns of most companies. Toxic and non-toxic waste disposal is another key concern; companies find this to be one of the most intractable problems they face and expect to pay much more for waste recycling and disposal in the years immediately ahead.

The cost of compliance. No one disagrees that, philosophically, pollution must be controlled, but some see the costs of achieving technically feasible environmental standards as excessive when compared to the benefits derived. Failure to factor cost/benefit ratios into the decision-making process can lead to a misallocation of technical resources. Further, less-industrialized countries can ill-afford to pay for the cost of pollution control, let alone pursue environmental policies that interfere with free trade.

Setting policy. Environmental policy decision-making most often resides with the President or CEO. In the United States and Canada, executive vice presidents are more likely to have this responsibility than in Europe. When preparing for a new environmental thrust, most companies appoint a corporate Board member or charge a top-level committee with the task. Weighing the likelihood of increased credibility with customers is an important indicator of the value of a proposal change. In the United States, the customer comes first; less so in Canada and Europe.

Many firms rely on trade associations to assist in environmental lobbying programs, but admit that the technical data presented by associations is often viewed as biased and not credible.

New ventures. While some businesses affected by environmental regulations can expect a slowdown in revenues and an increase in costs, other companies will clean up on the cleanup. The investment community predicts opportunities in trash disposal and pollution abatement technologies. Businesses that specialize in air and water filtration systems, recycling, and machinery and tool cleaning are expected to prosper. "Environment-friendly" products, on the other hand, have been greeted with deep-seated skepticism on the part of the consumer.

The Environmental/Business Outlook

Twenty years after the nation's first report on environmental quality, there have been gains made, losses posted, and the rhetoric adjusted a bit. But the only substantial change in the problem is its scale. It is enormous, and has become increasingly global. This report examines environmental problems and how U.S., Canadian and European firms are seeking solutions to them.

Worldwide, a pattern of environmental concern is already emerging. National security is being redefined; national sovereignty, environmental advocates say, simply does not make sense when trying to reverse global warming, acid rain, destruction of the upper ozone layer, or toxic waste emissions into the air and waterways.

Sustaining Development

One of the main concerns companies face is the relationship between economic development and environmental integrity. The growth of per capita income and population places severe demands on the physical environment and raises concerns about maintaining the natural resource base, protecting clean air and water supplies, biological habitats, soil fertility, etc.

Concern for diminishing resources is fueled, in large part, by continuing population growth. The World Bank projects the total global population to increase to more than six billion in the year 2000 and to eight billion or more in 2025. The distribution of this growth is not uniform. The substantial increase in Africa and, secondarily, Asia, vis-à-vis the modest increase in Europe and North America, indicates that by 2025 the economically developed countries will represent the declining proportion of the world's population. The importance for business is that approximately 80 percent of global GNP is produced in the developed countries, which contain only 20 percent of the population.

In the United States

Despite the wide array of problems, much progress has been made since the Stockholm Conference on the Human Environment, convened by the United Nations in 1972. In the United States, there have been considerable gains. With the exception of nitrogen oxides, air quality has improved. The same can be said for water pollution, with the exception of ocean dumping.

But there is continued pressure for the passage of new federal environmental legislation. Often, a mobilizing event, usually an ecological disaster, produces such a law. The toxic disclosure law followed the Bhopal incident; Superfund legislation followed the Love Canal disclosures. The *Exxon Valdez* spill focused a nation already disturbingly familiar with holes in the ozone layer and, following the peculiarly hot summer of 1988, global warming.

However, the states are not waiting for federal protection. For example, Virginia, Maryland, Pennsylvania and the District of Columbia are cooperating in a regional effort to clean up the rapidly deteriorating Chesapeake Bay. New Jersey has sharply restricted development on its freshwater wetlands. This is only the latest move for this bellwether state; earlier, it enacted the nation's first mandatory recycling law, requiring each municipality to sort and salvage 15 percent of its paper, glass and other solid waste.

In the United States, the Clean Air Act cuts new-car pollution to 2.5 percent of 1970 models' emissions. Industrial toxic air emissions will be reduced by as much as 90 percent by 2003. Acid rain should also be halved.

Acid rain — an issue concerning both the United States and Canada — involves the fewest uncertainties. Years of research have identified the causes and laid out the remedies. Aging coal-fired power plants produce sulfur dioxide, the major precursor of acid rain. Fifty Midwest generating stations account for half the total U.S. production of sulfur. The Administration proposes cutting sulfur dioxide emissions by nearly half, raising the ire of Midwest Congressmen and the United Mine Workers.

After a decade of calling for further study, it looks like something is about to happen. Will this hurt the economy as a whole? Certainly; some jobs will be lost as the legislation will reduce mining employment in high-sulfur coal belts. But it will also increase employment in the low-sulfur coal mining operations. Scrubber manufacturers are expected to increase hiring as well, since there will be increased demand for their products.

Water quality is the success story of U.S. antipollution efforts: drinking-water supplies are mainly safe. The National Pollutant Discharge Elimination System has resulted in water pollution levels five times lower than the amount of pollutants released in the air.

The Canadian Outlook

Opinion polls indicate that Canadians rate environmental concerns as highly as do citizens of other Western nations. Canadian corporations are "going Green" where possible, as in other nations.

Although environmental priorities in Canada tend to be region-specific, Canadian concerns are similar to those in the other industrialized nations (i.e., clean air and water, disposal of toxic and hazardous wastes, greenhouse gases and global warming, and the preservation of wilderness and wildlife). In examining environmental issues of particular importance in Canada, four topics deserve mention: first, the Canadian response to the work of the World Commission on Environment and Development (the "Brundtland" Report) and the subsequent federal work to frame a comprehensive national "Green Plan"; second, the heavy resource-based dependency of the Canadian economy and the attendant implications for environmental policy; third, the increasing proclivity of Canadian environmental groups to challenge industry and government activities in the courts; and last, the shift in attention from a focus on environmental problems to debate concerning the means or mechanisms best suited to solving these problems.

The Canadian economy is more dependent on resource-based industries than the United States and Western Europe; the outputs from the oil and gas, petrochemical, mining, forest products, and utilities sectors account for a greater portion of GDP in Canada than in most other industrialized nations. Natural resource dependence is even more pronounced in certain regions of the country: whole communities and provinces in Western and Atlantic Canada rely almost entirely on the processing of natural resources to sustain their economies. Both the regional nature of resource dependence in Canada, together with provincial jurisdiction in most aspects of resource management, present formidable challenges to the formation of an acceptable national environmental policy in Canada.

Meanwhile, about $14 billion worth of resource megaprojects (and thousands of accompanying jobs) are being held up by litigation and regulatory review. Court decisions require federal and provincial agencies to revise their environmental impact assessment process. Litigation and an altered judicial climate threaten to discourage business investment in these Canadian resources.

Canadians are generally agreed that certain broadly stated environmental goals are "the right things to do" (e.g., cleaning up air and water, safely disposing of hazardous wastes, and reducing levels of greenhouse gas emissions). But setting quantitative and regional targets to reach these goals meets with less consensus—perhaps far less, once actual compliance costs become known.

A number of Canadian business and research groups, including The Conference Board of Canada, have recently established programs or task forces to explore and explain the use of market-based instruments to foster the achievement of environmental goals. A host of issues need exploration. Among the principal ones cited by Canadian respondents are:

- which instruments are appropriate for which problems?
- the issue of revenue neutrality versus revenue enhancement;
- international competitiveness under different market instruments;
- regional impacts of various instruments; and
- internationalization of certain mechanisms (for example, tradable emission permits to control greenhouse gases). [1]

The European Outlook

Environmental concerns, as serious European political issues, came into their own in 1988. Much of Europe, horrified, watched the death of thousands of gray seals in the North and Baltic Seas. The seals washed up dead along the coasts of England, Sweden and West Germany, killed by a rare virus, their immune systems thought to have been compromised by exposure to raw sewage and toxic wastes. At about the same time, the freighter *Karin B.* set out from Italy carrying 2,100 tons of toxic waste for disposal. It was turned away at every port. It finally wound up, 10 months later, back where it started, in Italy. The publicity accompanying these events, coupled with mounting anxiety about the warming of the earth's atmosphere and the consequent "greenhouse" effect, and CFC-induced holes in the Antarctic ozone layer, galvanized Europe. Since then environmental politics have not been the same.

---

[1] The section on the Canadian outlook was prepared from material supplied by Alan Howatson of The Conference Board of Canada.

The chairman of one of Europe's largest chemical companies has acknowledged the need for the chemical industry to "change things." Criticism of the chemical industry—one with annual sales of over $300 billion—is strongest in West Germany where damage to forests from sulfur dioxide emissions is patently visible. In Norway, chemical plants are said to pose a serious problem. The plant of one hydroelectric firm is among the world's largest producers of chemical fertilizers. It is also a producer of substantial toxic wastes, which are reported to end up in the Freier Fjord. Responding to such problems, the Norwegian government is adopting tough antipollution laws and has doubled its budget to enforce these laws.

The EC wishes to develop rules that will be flexible enough to allow countries at different stages of economic development to pursue environmental policies that do not interfere with free trade. In the past, the EC Commission attempted to draft environmental policies, but often these lacked the legal foundation to make them effective. But now the Single European Act, which sets the course for the completion of the integrated economic market in 1992, contains a provision that the environment must be protected.

Among the most environmentally conscious people are the Dutch, West Germans and the Danes. These countries have well-developed national policies, and regulators in these nations tend to regard the EC as a threat to their national standards.

The Danish public gives environmental issues a high priority. Politicians have followed suit with a series of measures that has led Danish manufacturers to claim that they will have to spend twice as much on environmental measures as they do on research and development. A Dutch plan to cut all pollution by 70 to 90 percent by the year 2010 will finance environmental care by having the polluter pay. The Dutch have already had success in reducing the sulfur dioxide emissions which cause acid rain.

In the middle of the environmental spectrum are Great Britain, France and Belgium, where environmental policies have existed for years, but where current EC regulatory actions have tended to force what were once merely policies into specific legislation. Greece, Portugal, Spain, Ireland and Italy are said to be in the earliest stages of developing environmental policies. For these countries, EC legislation has become both a spur and a framework.

Clouds over Eastern Europe

The unexpected political events opening up Eastern Europe have revealed the devastation of that region's natural resources. Poland, Hungary, East Germany and Czechoslovakia are said to be environmental disaster areas. Forty years of Communist-controlled industry has left these countries the most polluted of all the world's industrialized nations.

In East Germany, nearly 9 percent of agricultural land is reported to have been ruined by pollution. A lack of sewage treatment plants can be seen throughout East Germany where wastes run through sewage pipes directly into canals, and then into rivers and streams.

In Hungary, four-fifths of the five million tons of hazardous waste produced each year is disposed of improperly. In northern Czechoslovakia's heavily industrialized areas, life spans are 15 years shorter than the national average, according to Czech government estimates, and pollution is said to be a major issue.

Seventy percent of Poland's southern forests are projected to die by century's end; and between 1965 and 1985, the percentage of Polish water fit for human consumption dropped from 33 percent to 6 percent of all surface waters.

Among the most critical changes facing this region are those that separate industry from the state, making industry fully accountable for pollution control.

Companies Assess Standards and Benefits

The businesses surveyed generally find present environmental standards to be reasonable and/or technically feasible (see Table 1). About three-quarters of the U.S. companies polled find this to be so, while over four-fifths of European respondents and Canadian companies support their countries present environmental practices.

In the United States there was agreement that, philosophically, pollution must be controlled. The only real question is to what level, and at whose cost. While environmental standards are technically feasible, some of those questioned see the costs to achieve them as excessive when compared to the benefit derived. To one respondent, this is due "in large part, to grossly over-conservative margins of error associated with health-based standards." Among the observations made by those commenting on existing environmental standards are the following:

> In some cases, standards are developed on the basis of mechanical, theoretical or laboratory data which do not apply to real world applications.
>
> —*a pharmaceuticals producer*

> Environmental requirements often do not recognize the differences between operations (e.g., a sanitary landfill versus a coal ash monofill). This sometimes results in regulatory overkill or an overly rigid position on the part of the government. The easiest path for a regulator affected by bureaucratic inertia is to go by the book, ignoring unusual factors at a site that warrant a departure from a narrow, cramped reading of the law or regulations.
>
> —*a steel producer*

Table 1: Companies Believing Environmental Standards to be Reasonable and/or Technically Feasible

	U.S.	*Canada*	*Europe*	*Aggregate*
Yes	76%	87%	87%	81%
No	24	13	13	19

Percentages based on valid responses

> Standards are derived from regulations, and often people with little experience interpret the regulations. What makes perfect sense in one area is deemed illegal in another even though the alternative creates more waste. Permitting procedures are atrocious.
>
> —*an oil company*

> Federal standards are generally reasonably set, based upon an evaluation of political demands, environmental technologies and economic considerations. At the state level, however, standards are set which cannot be consistently and accurately monitored using current analytical lab techniques.
>
> —*a foods manufacturer*

Companies believe environmental standards should be based on sound science. Standards, executives say, become unreasonable when they lose sight of the overall goal: protection of human health and the environment. Too often, other concerns take precedence, like ease of implementation and enforcement, or pressure from interest groups and politicians. Furthermore, some managers commented, the existing statutes have overlapping authorities and vary in their objectives and level of protection.

One of the most thoughtful criticisms centered on the schism between public policy and economic realities:

> We believe that environmental public policy is not always coordinated with the economic and technical realities of various compliance requirements. Often, the technology does not exist to meet a particular public policy goal, and industry is faced with trying to develop the technology and implement it simultaneously. Overseas competition and other economic factors have severely strained the competitiveness of a number of American industries. While we support a cleaner environ-

> ment, unrealistic cleanliness standards and rapid installation deadlines can only erode America's industrial position further.
>
> *—a gas utility*

Although 76 percent of U.S. respondents are comfortable with the reasonableness of environmental standards, many of those respondents offered "yes, buts." For example:

> Regulations in general are reasonable; however, not enough management oversight exists in the timely and objective implementation of these regulations. In addition, overlapping jurisdictions by several regulatory bodies at federal, state and local levels are burdensome, costly and often conflicting.
>
> *—a power company*

> In general, the spirit of the regulation is reasonable and the technology does exist to meet those standards. However, absolute and expeditious compliance requirements mandated hastily through Congress or haphazardly from state to state impose impractical standards and deadlines for industry.... The severe enforcement authority of the regulations expects absolute and thorough attention to all aspects of the regulation. This latter aspect is often unreasonable.
>
> *—a pharmaceutical company*

Overlapping or Conflicting Standards

In some cases, while there was support for reasonable standards, the implementation of the standards was deemed confusing and illogical. For example, disposal of certain hydrocarbon liquids is exempt or may be sold as "product" in some operations while similar liquids—with the same type of chemical base—must be handled as hazardous waste in other operations. The complexity of environmental regulations, managers say, has caused overlapping and sometimes conflicting rules governing the same waste. "The generic application of regulations and technologies across diverse industries leads to inefficiencies, over-regulation, under-regulation and a compliance-only mindset," one firm's vice president of environmental affairs says. Excessively complicated standards tend to expand project lead times, adding additional costs.

Some companies took the Environmental Protection Agency (EPA) to task. "[EPA] standards are generally technically feasible," says one Southwestern oil company, "but the EPA enforcement is not. We operate in numerous EPA districts and their oversight and enforcement activities range from ridiculous to punitive. The problem is not the regulations; it is the bureaucracy."

Others described what they see as an adversarial relationship between EPA and U.S. industry and view it as counterproductive. EPA compliance procedures are seen as excessively burdensome and, as in the case of Superfund, not matching benefits to costs.

Of the three out of four firms who do believe environmental standards are reasonable, many say that they work closely with government to achieve standards they can live with.

> [Our company] supports industry research and lobbyists that present data and industry's position during the legislative and regulatory process. Therefore, for the most part, by the time standards are adopted, we generally have had time to prepare for compliance requirements.
>
> *—a Midwestern utility*

> We believe that environmental standards, as they are expressed in environmental laws and regulations are necessary and generally reasonable. Where environmental laws and regulations are not reasonable, we have a responsibility to work with regulatory agencies and with law makers to revise or eliminate the unreasonable rules.
>
> *—a Southwestern utility*

> The environmental standards faced by our company today are both reasonable and technically feasible. Industry had long neglected the impact of its activities on the environment. Today, most industries recognize that clean air and water are important to the company as well as the public. It is certainly reasonable for the government to impose such standards. The technical feasibility of the existing standards is evidenced by our meeting such standards the vast majority of the time.
>
> *—a tire manufacturer*

In Canada, only one in seven companies reports problems with Canadian environmental standards. Those that do complain say that standards are no longer based on demonstrated environmental need, they are based on what technology can provide in terms of abatement — "treatment for treatment's sake." These firms believe that the analytical ability to measure small quantities of substances far exceeds current ability to understand their real world significance to health and the environment. In some cases, emissions for example, proposed standards are believed to be unattainable. Other companies find enforcement inconsistent. A copper mining firm comments, "we build a plant to last 25 years, but over the life of the operation, the rules keep changing."

As in the United States, while firms support the laws and regulations in principle, some believe the objectives of the law are frustrated by the failure to provide adequate means to dispose of materials — such as low-level radioactive wastes.

Provincial regulations are seen as more than reasonable, except for the issue of polychlorinated biphenyl (PCB) disposal. Current regulations state that PCB-containing equipment will be out of service by 1993. However, no facilities exist in Canada to destroy the products once the containing equipment is taken out of service. One of Canada's transport firms says there is a solution to the PCB disposal process, but the political will to use it is lacking:

> A case in point is the ability to destroy PCBs in cement kilns. This technology has been available since 1972 yet no one has seen fit to use it because of real or perceived public opposition.

Political problems are also apparent in the overlays of federal and provincial jurisdictions, leading to confusion in compliance procedures. And politics plays a role as Canadian companies attempt to shift attention from their particular industry to another. A heavy equipment manufacturer writes:

> Numerous changes in processes, additional equipment and revised procedures have been implemented in our factories to comply with existing regulations on air, water, and solid waste disposal. The incremental cost to improve further would be substantial, but improvements would be negligible. Effort and attention should be on other industries where the amount of pollution is significantly higher (i.e., coal-fired power generation, pulp and paper, steel-making, and petrochemical refining).

Generally, Canadian and European companies stand more squarely behind federal environmental standards than do their counterparts in the United States:

> The knowledge of the chemical/biological reactions of environmental contaminants has increased considerably in the past few years. This has stimulated the interest to develop new technologies related to pollution abatement and, in some cases, the complete removal of contaminants. As our monitoring system becomes more sophisticated and our technical capability increases, new environmental guidelines and standards will be in place.
>
> —*a Canadian hydroelectric utility*

> We believe existing environmental standards will be tightened as they should be. They are technically feasible but time is needed to reach them. There is a delicate balance between highest achievable standard, best available technology and sustainable development. We aim to be pollution free.
>
> —*an Alberta chemicals company*

In Europe, the strongest support for present standards comes from countries with substantial industrial concentrations while, predictably, countries with smaller industrial bases find present standards burdensome. Those who do not support the standards say they are "too ambitious," or resent allocating scarce financial resources for this purpose. Of course, environmental issues differ from country to country, but there are several very clear areas of agreement among the European respondents. These are:

- Existing regulations, while attempting to be all-encompassing, have become overly complex and difficult to interpret.
- Some standards can only be met at extremely high cost.
- In some cases, such as in groundwater pollution, there is too much variation from country to country or state to state; standards for cleanliness are unclear.
- Scientific and technical evidence is too frequently subordinated to political "hype." Resources are therefore at risk of misdirection.
- Standards are sometimes too strict and sometimes not related to what is needed to protect the environment; they are based on Best Available Technology.

Nearly nine out of ten of the European companies do support their countries' environmental standards. Some may find the standards unreasonable, but say they are technically feasible. A multinational oil company finds German standards "largely reasonable" but sees the "danger of losing sight of the right balance between ecology and economy." Politicians in Germany are seen by business as especially prone to pleasing the "green" interest group and disregarding economics and reasonability in the process.

A Danish food producer does not find his nation's standards particularly relevant to dealing with global environmental issues, where the efforts of individual companies and countries are necessary but not sufficient. "All countries must participate," this firm reports. "However, it is a matter of great importance for industry to know what its obligations are and not find itself constantly subject to varying requirements."

A French vintner did not find it possible to answer the survey question simply, saying:

> We think that each case to be treated has to be studied with the will to apply the standards, but they are not often very well adapted. [Therefore,] it is necessary to [have] open discussion with authorities so as to find out the good solutions. At least we are well convinced that standards must be developed to meet the needs expressed.

The Costs of Compliance

World political leaders are almost all in agreement on the need to halt environmental degradation. But not all are certain of the extent of the risks faced, and the costs of eliminating these risks. One example is global warming; the United States is not sure that the evidence supports the dire predictions presently bandied about. But one item everyone agrees on is their distaste for the cost. It is staggering. Unless it becomes unexpectedly easy to sharply reduce the need for oil, natural gas and coal, the cost of reversing the carbon dioxide problem will be borne through the next century, and will run to trillions of dollars. At present, private and public expenditures on pollution control exceed $65 billion annually.

In the decade between 1978 and 1988, there were approximately 3,900 economic and scientific studies of acid rain. [2] The costs for controlling acid rain are inconsistent from study to study, with wide swings across the cost spectrum. One factor is the differing assumptions about the future prices of low-sulfur coal, oil, and the future railroad costs of moving coal to the markets. Some models use constant dollars, while others use future or present value.

The author or sponsors of a particular study will also influence how data is collected and used. For example, a utility burning high-sulfur coal might estimate costs considerably higher than a government study, because the utility would have to assume the most draconian compliance scenario. Companies are also concerned about the costs associated with cleanup of toxic waste sites. Under Superfund, those who generate, transport or store hazardous waste are liable for its cleanup, no matter how long ago or how legal company actions were at the time they were taken. Companies are trying to get their insurers to share the burden, but have not been too successful.

Court rulings seem to be uneven, but the general feeling is that judges and juries want to make sure the cleanup is accomplished. If the polluter is a smaller firm or township that could not possibly pay for a cleanup, courts are more willing to hold the insurer liable. But if a corporation is big and healthy, it is likely to get the bill.

The stakes are high — the bill for past pollution is likely to approach $100 billion, and corporations seem to be bearing it alone. European companies are bound by European laws, which have traditionally held each individual or corporation accountable. But legal scholars are calling for a newer approach — loss spreading — based on the premise that everyone shares in the benefits of industrialization and everyone must now share in the costs.

Costs are escalating in Europe as well. Sandoz, the Swiss chemicals company, estimates that in 1987 it spent SFr 208 million on operating costs associated with handling waste, and invested an additional SFr 66 million in capital equipment. From1988-91, Ciba-Geigy committed SFr 830 million to such measures.

Clearly, companies in the less-industrialized European countries—Greece, Portugal, Spain and Ireland—cannot afford these costs. These countries are in the earliest stages of developing environmental policies and are counting on the EC to develop rules that will be flexible enough to allow countries at different stages of economic development to pursue environmental policies that do not interfere with free trade. For these countries, EC legislation will become both a spur and a framework.

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[2] Burt Solomon, "The Capital Numbers Racket," *Across the Board*, February 1988, p. 54.

Issue Identification and Policy Development

Most of the companies studied have a formal system in place for identifying key environmental issues. More than 70 percent of the firms surveyed have such a system; U.S. companies lead with 77 percent, while only 71 percent in Europe and 61 percent in Canada utilize such a system.

Three-quarters of all companies questioned depend on their own staff for the identification of these issues; the number of companies relying solely on outside consultants is insignificant. A number of companies use a combination of both inside staff and outside expertise; in the United States, 30 percent of the companies use such an approach.

Those companies that go this route do so primarily, one executive says, "in the context of external pressures from community groups. Outside consultants have a better sense of this than we do. Our people think of the company first—the consultant gives us balance." This practice is less common in Canada and Europe, where only 16 percent and 12 percent of the firms, respectively, report using a combination of inside and outside talent.

Over half of the European companies, 56 percent, prepare a formal environmental issues agenda for review by their senior management. In the United States, half prefer an informal process; issues are discussed at committee meetings, board meetings, at the plant or divisional unit level and then proceed up through management levels in a variety of forms. Canadian companies also appear to have a slight preference for the informal method, with 53 percent using such a technique.

When environmental policy decisions are made at corporate headquarters, the responsibility most often resides with the president or CEO (see Table 2). The most significant differences between the United States, Canada and Europe occur at the executive and senior vice president levels. U.S. executive vice presidents (EVP) are twice as likely to have this responsibility as would their counterparts in Canada, and European EVPs three times as likely as their Canadian colleagues. At the senior vice president (SVP) level, there were no European officers responding who had these decisions as their responsibility, while 17 percent and 15 percent of U.S. and Canadian companies, respectively, depend on SVPs for this.

Where is the Environmental Policy Function Housed?

In the three regions surveyed, many companies have established a specialized unit dealing only with environmental affairs. But there are regional variations. Examining the figures in Table 3, one sees that Canada has fewer companies with specialized units, compared to the United States and Europe. Canadian companies

Table 2: Identification of Decision-Making Level at Corporate Headquarters by Frequency of Mention

Title	*Aggregate*	*U.S.*	*Canada*	*Europe*
President or CEO	43%	41%	47%	45%
Chairman of the Board	16	18	11	18
Executive Vice President	14	14	7	23
Senior Vice President	14	17	15	0
Vice President	13	15	12	7

Because of rounding, figures do not add up to 100 percent

Table 3: Location of the Environmental Policy Function at Corporate Headquarters

Name of Unit	*Aggregate*	*U.S.*	*Canada*	*Europe*
Specialized unit dealing only with environmental affairs	40%	41%	31%	49%
Assigned as a major responsibility to an existing corporate function	37	35	42	38
Corporate committee or task force	10	9	16	7

tend to depend more heavily on corporate committees or task forces.

When examining the assignment of environmental affairs to specific corporate functions, the survey found that European companies tend to see environmental affairs as part of operational activities, vis-à-vis government or public affairs, and report the policy-making function located in manufacturing twice as often as U.S. companies; it occurs in product-related areas seven times more often than in the United States and Canada. European companies also delegate more of the policy decisions to plant services units than do Canadian and U.S. firms.

Most telling, perhaps, is the fact that 15 percent of European respondents to this question elect to place their policy decisions in a planning unit, as compared with one percent in the United States and four percent in Canada. "Until recently, all our decisions on the environment were tied to our manufacturing facilities on a country-by-country basis," reports a British agricultural products firm, "but with the [European] economic integration ahead in 1992 this has become a strategic planning concern for our senior management."

Some U.S. firms locate the environmental affairs function in either manufacturing or engineering; not a surprising choice, considering U.S. concerns with compliance and source reduction. However, the legal department rated slightly higher than either manufacturing or engineering, perhaps reflecting the litigious nature of the United States, especially when confronted with highly regulated industries.

The environmental affairs function is almost always separated from the public affairs/government relations unit. Most often, the person responsible for environmental affairs comes from an engineering or technical background, leading occasionally to a less than sensitive handling of outside constituencies. (See "Public Perception/Building Credibility," page 33.)

Preparing for New Directions

In order to prepare for a new environmental thrust, many companies either appoint a corporate board member, or charge a top-level committee with the task of overseeing the firm's progress on environmental issues. Companies then conduct in-house surveys to analyze and determine their environmental progress, while at the same time polling outside groups to see if changes in company practices and procedures will raise its credibility with customers.

Environmental Policy Abroad

Companies handle policy decisions quite differently when it comes to their overseas activities. Two in five respondents make such decisions at corporate headquarters (See Table 4). More than 50 percent turn these decisions over to some combination of host country managers and facility operators. This percentage rises when looking at European companies. Companies headquartered in countries with long histories of colonialization, such as Great Britain, France, and Belgium, find

Table 4: Environmental Policy in Foreign Operations

Location	*Aggregate*	*U.S.*	*Canada*	*Europe*
At corporate headquarters	38%	34%	50%	38%
At the host country management level	41	40	41	47
At the host country operating facility	10	12	4	11
Other	11	15	4	4
Valid cases	*210*	*119*	*46*	*45*

even more extensive delegation of environmentally sensitive decisions to the local level.

Developing Policies

Corporate environmental polices are undergoing rapid, sweeping changes as companies respond to new laws, pressure from external constituents and concern from within the firms' own management teams. Some of these changes are evident in publicly announced moves. For example:

- The American Petroleum Institute (API) has announced an eleven point set of guiding environmental principles. Adherence to the principles is mandatory for corporate members, as the principles are part of API's by-laws.
- Conoco has committed to a nine point environmental program expected to cost the company $50 million a year.
- Phillips Petroleum has adopted a new mission statement emphasizing environmental protection and safety.
- ICI America's environmental reports from each of its different units are one of only two compulsory reports prepared for ICI's annual business reviews. The British-based parent company is the world's fourth largest chemical firm.
- Disney, after several bruising bouts with environmentalists, has created a new corporate vice-presidency for environmental policy and appointed a staff zoologist to the post. The office will deal not only with compliance and response to activists, but will encourage "environmental themes" at Disney facilities.

Types of Policies

Policy statements made available to The Conference Board can first be divided into two general types. These are: (1) generalized statements of philosophy and/or overall objectives; and (2) guiding principles as drafted by trade associations, and used by individual firms.

Generalized statements of philosophy and objectives. Some firms are content to issue vague statements in which a company recognizes its duty to be a good corporate citizen. These homilies are usually prefaced by "we wish to be known as ..." and cover a broad range of corporate citizenship, including environmental issues.

Often a company will circulate a policy on environmental quality that is simply a statement of broad environmental objectives. There is no accompanying description of how those objectives are to be met; nor is there any identification of the responsible company officials. These statements frequently cover points such as:

- the need to control emissions from operations that impact on the environment to a level equal to or better than the standards set by responsible government agencies;
- to cooperate fully with government environmental control agencies;
- to improve environmental control and waste management procedures and practices on a continuing basis;
- to engage in and contribute to research for the development of more effective pollution control equipment and processes
- to incorporate the best available environmental control technology and systems economically achievable into company operations; and
- to safeguard employees and the public from injuries or health or environmental hazards.

Guiding principles as drafted by trade associations. Trade associations often draft environmental guidelines or objectives for their members. In some cases, as mentioned earlier, the guidelines become part of the association's by-laws and members are bound to adherence. For example, the Canadian Chemical Producers' Association uses stronger language than that of the "simple statement" category in their "Guiding Principles." Part of their publication *Responsible Care: A Total Commitment* states that the company must:

- ensure that its operations do not present an unacceptable level of risk to its employees, customers, the public or the environment;
- provide relevant information on the hazards of chemicals to its customers, urging them to use and dispose of products in a safe manner, and make such information available to the public on request;
- make responsible care an early and integral part of the planning process leading to new products, processes or plants;
- increase the emphasis on the understanding of existing products and their uses and ensure that a high level of understanding of new products and their potential hazards is achieved prior to and throughout commercial development;
- comply with all legal requirements which affect its operations and products;

- be responsive and sensitive to legitimate community concerns;
- work actively with and assist governments and selected organizations to foster and encourage equitable and attainable standards.

Origin and Implementation of Policies

In terms of origin and implementation, policies are:

1. Designed and implemented at headquarters.
2. Designed at headquarters and implemented in business units.
3. Designed and implemented at the business unit level.

Policies designed and implemented at headquarters. In several of the companies studied, environmental policies are first developed at the corporate level and then administered by corporate staff officers. For example, one of the oil companies speaks very clearly to the implementation of their policy by pinpointing the corporate "home" for environmental compliance. After a lengthy description of their environmental policy, the company identifies the senior vice president, human resources, as the officer responsible for the interpretation of the policy. The company further identifies all its executive vice presidents as directly accountable to the CEO for the implementation of the environmental policy within their operating groups.

Policies designed at headquarters and implemented in business units. In some cases, a policy directive may outline the general framework against which guidelines are developed and implemented for each location or sector of activity. Shell Canada and Amoco Corporation in the United States are good examples of firms using this design; enforcement occurs at the operational level, and performance is weighed and judged at corporate headquarters. This design is often used by companies having far-flung exploration, extractive or agricultural activities.

Policies designed and implemented in business units. Some companies that appear to have only generalized policies may have, in fact, turned the responsibility over to local managers who, over time, have developed their own programs. For example, BATCo in the United Kingdom has extensive operations in many developing countries and supports a wide range of environmental activities, managed by the senior BATCo official in each locale.

For BATCo, forestry projects play an essential role in community development, particularly in arid areas which could easily be lost to the desert. Tree planting programs under local management are under way in many African and Asian countries. Two of the most visible examples are Brazil, where over 150 million trees have been planted by tobacco farmers since 1960, and Kenya, where 10,000 farmers have planted a total of 13.5 million trees.

Other Strategy Considerations

When factoring external considerations into the firms' environmental policy-making process, companies were inclined to give the most weight to the legal and regulatory requirements they face. Following in importance were social responsibility and — somewhat behind — response to liability pressures (see Table 5).

The necessity to stay within the limits of the law is more than twice as important as a social commitment to the greater good (see Appendix Table 1). This is not surprising, considering the array of federal, state and local regulations companies face. Violations of toxic waste disposal, clean air, clean water, solid waste disposal, right-to-know, coastal and wetlands management laws — to name a few — are too costly to take lightly.

Social responsibility appears to be internally driven, rather than a result of external pressures. Companies comment on pressure from within, the younger managers and their families who are making demands on top management that previous generations would never have dared to do. A British respondent writes

Table 5: Factors Reflected in Environmental Policy Decisions (by Rank)

Factor	*Aggregate*	*U.S.*	*Canada*	*Europe*
Response to legal or regulatory requirement	1	1	1	1
Social responsibility	2	2	2	2
Response to liability pressure	3	3	3	4
Response to community pressure	4	4	5	3
Response to shareholder pressure	4	4	4	4

** For percentages, see Appendix Table 1.*

"the environmental movement has succeeded in politicizing women in the United Kingdom — a group that has never before been mobilized by a single issue."

Externally, the customer comes first in the United States, and second in Canada and Europe. The most important external constituents in Canada are the provincial governments and, in Europe, local governments (see Table 6 and Appendix Table 2). Environmental activists are said to receive the least time and attention from corporate environmental affairs officers. The financial community and the media are only slightly less influential than the activists. "We stay as far away from the press as we can," says a fertilizer and pesticide manufacturer. "When a news show calls, we know we're in trouble. And courting the press has been a disaster for us. We've tried to give them as much information as possible, but what they really want is our heads."

The Role of the CEO

Respondents were asked to characterize the role their CEO plays in environmental issues, using criteria of leadership, interest and commitment (see Table 7). In 50 percent of U.S. and 57 percent of European responses, the CEO is seen as the personification of the company's philosophy and position on environmental issues and problems; 44 percent of the Canadians responded in a similar fashion. Slightly more than one-fourth of Canadian CEOs do not involve themselves at all with environmental policy. This contrasts sharply with 14 percent in the United States and 10 percent in Europe. About one-third of U.S. CEOs are active policymakers and participants with outside groups, while more than one quarter do so in Europe and Canada.

Who Represents the Company?

The Conference Board looked at the full range of company executives and outside consultants who might be called upon to represent the company at agency meetings, government hearings, and public meetings, and asked respondents which persons represent the company, and on what occasions. The tabulations appear by rank order in Table 8 and Appendix Tables 3, 4 and 5, and by percentage in Appendix Tables 6, 7, 8 and 9.

Environmental officers, when present in a company, were the first choice in all categories in Europe and the United States, and first choice in Canada for regulatory agency representation and federal government hearings. The manager/director of the corporate unit most often represents Canadian companies at state government hearings, while local government hearings and public meetings are covered by the plant or facilities manager.

Canadian and European companies tend to select their top management as representatives at federal and

Table 6: Importance of External Constituents (by Rank)

Ranking

	Aggregate	*U.S.*	*Canada*	*Europe*
Customer	1	1	2	2
State or regional governments	2	2	1	3
Federal or national governments	3	3	4	4
Local governments	4	5	5	1
Stockholders	5	4	6	5
Community	6	6	7	6
The media	7	7	6	6
Financial community	8	7	7	7
Environmental activists	9	8	8	7

For percentages, see Appendix Table 2.

Table 7: The External Role of the CEO

Role	*Aggregate*	*U.S.*	*Canada*	*Europe*
Personification of company philosophy	50%	50%	44%	57%
Policymaker and participant with outside groups	32	35	26	31
Maintains a hands-off policy	17	14	26	10

Remaining respondents checked some combination of the three views

Table 8: Who Represents the Company? United States, Canada, Europe Combined (By Rank)

Company Executive or Consultant	*regulatory agency representation*	*federal government hearing*	*state government hearing*	*local government hearing*	*public meeting*
Top management	6	3	6	8	5
Manager or director of corporate unit	2	4	2	3	4
Plant or facilities manager	7	10	5	1	2
General counsel	4	5	4	4	7
Environmental affairs officer	1	1	1	2	1
Public affairs officer	9	9	9	6	3
Government relations officer	8	6	8	7	8
Tax specialist	11	11	11	11	12
Financial officer	12	12	12	12	11
Trade association representative	3	2	3	9	9
Lobbyist	10	8	10	10	10
Consultant	5	7	7	5	6

For percentages, see Appendix Table 6

state government and regulatory agency hearings much more often than do U.S. companies, which prefer to use functional specialists to represent the company. U.S. companies make heavy use of trade association representatives, reinforcing the earlier discussion on the role of these trade groups. Lobbyists are used much less frequently in all categories in Canada than they are in the United States and Europe. The role of the general counsel, on the other hand, is much more important to U.S. companies than it is to Canadian and European companies. Again, U.S. companies are part of a more litigious society.

Gearing Up for 1992

As 1992 approaches, companies must prepare for a new wave of environmental government regulations. One of the major environmental problems facing European firms will be the harmonization of environmental standards. Europe is expected to swing toward West German environmental standards—the most demanding in Europe. U.S. companies, already used to stringent regulations, do not see this as a problem. In fact, an oil company respondent says that multinational corporations and international organizations have been partially responsible for this. "Pollution controls, reductions and remediations that are required in this country [the United States] by statutes or regulations appear to be migrating to Europe," he says. "It is unlikely that their standards will be stricter than U.S. standards."

Two out of five of the U.S. companies responding to The Conference Board's survey anticipate their firm's activities will be significantly affected by the movement toward EC-wide environmental standards. One third of the Canadian firms responded in a similar fashion.

European companies divide strategies for participating in the development of EC-wide environmental policies equally among three options (see Table 9):

1. Use of a special task force within the company. This is usually at the board level or, if managed by staff, will be a group of senior vice presidents.
2. Use of an existing formal unit of the company. Most firms have their environmental units on the scientific or technical side of the company, rarely in corporate management.
3. Use of lobbyists to the EC. Rather than having a Brussels-based lobbyist, most companies have lobbyists in each country in which the firm has interests. The lobbyist then journeys to Brussels carrying the flag of the national interest, rather than the multinational corporation's banner.

In the United States and Canada, much smaller percentages are involved in these activities (five percent and under). However, 12 percent of the Canadian firms are monitoring EC developments, as compared with 29 percent in the United States.

Americans fear that the growing European "green" movement is affecting environmental requirements in a way that will be inconsistent among nations. Adoption of EC directives by a specific country will have an impact on facilities within that country, while a more lenient country's facilities would not be similarly affected, thus creating disadvantages among similar manufacturing companies within different countries.

The European community is seen as lagging behind the United States in implementing environmental standards. American respondents assume that new European regulations will cause that region to move toward U.S. standards. "The major impact will be to improve the competitive balance between the United States and Europe," concludes a British oil company executive.

Other companies are not so pragmatic as they watch Europe move toward harmonized policies. For example, U.S. railroads transporting coal to port facilities for export to Europe perceive that EC-wide environmental standards might affect coal-burning and, therefore, affect the coal-export business in the United States.

European companies see the coming harmonized environmental standards as an important part of their positioning; they believe they will only keep their competitive advantage by conforming to these standards. Countries with already high standards, such as Germany and Switzerland, seek actively to prevent a distortion of different laws. Some German companies, in fact, hope their role as a forerunner on ecological issues will be moderated by the EC-wide directives. The harmonization of standards is considered critical in regard to Europe's role in world trade.

> The development of a coherent and technically sound framework of legislative measures and standards for the community is vital. We are active in participating in the consultative procedures which are operated by the Commission. It is of the utmost importance that scientifically sound, reasonably practicable standards are equally applied across the Community. Such well-based standards will avoid the possibility of rendering Europe uncompetitive as a trading bloc.
>
> —*a British drug firm*

Working with Outside Groups

Companies were asked to describe and comment on their working relationships with a variety of outside groups. These groups included regulatory agencies at several levels, environmental activists and local community groups, the media, and other companies and industries. Productive relationships are rank ordered in Table 10. The full range of responses by percents are shown in Appendix Tables 10, 11, 12, and 13.

The most productive relationships occur in two areas: 1) among other companies in the same industry, and 2) at the regional or state regulatory level.

Other Companies

Companies band together with other companies for a variety of reasons. Trade associations help companies solve legal, technical and regulatory problems. They work to transfer environmental information to all members, and save money by avoiding the repetition of similar studies. Trade groups also assist members in interpreting and clarifying rules and regulations. Among the comments of respondents on this point are:

> We have had some success with all levels of government in large part because of our participation in PACE, the Petroleum Association for the Conservation of the Canadian Environment.
>
> —*a Canadian oil company*

> Our relationship in trade association activities has been very productive, not only in providing leveraged research on a broad scale to investigate environmental issues, but also in providing a strong voice in responding to the U.S. Administration, the Congress, and regulatory agencies in the United States and abroad.
>
> —*a U.S. petrochemicals firm*

> Belonging to the Machinery Allied Products Institute (MAPI) Environmental Task Force has been extremely helpful as it shares environmental issues of concern to Fortune 500 companies. Open communication with other companies in the aerospace industry comes from membership in the Aerospace Industries Association (AIA) Environmental and Safety Task Force.
>
> —*a U.S. aircraft manufacturer*

A few firms prefer to work both with companies inside their own industry or in the same region.

Table 9: Company Strategies for Participating in Development of EC Environmental Policies

Strategy Option	*Aggregate*	*U.S.*	*Canada*	*Europe*
Use of special task force within company	8%	5%	5%	23%
Use of existing formal unit of company	7	4	2	23
Use of lobbyists to EC	7	4	1	23
Only monitoring EC developments	28	29	12	48
No current involvement	30	32	32	21

Totals do not add up to 100 percent because companies may use multiple strategies.

With other companies in our industry we exchange information and work together on research programs to achieve a commonality of position based on what we know and learn. With other industries, cross-fertilization through contact with other companies broadens our perspective and perhaps re-focuses our attention.

—*a Canadian paper company*

Regional and State Agencies

Companies work with state and regional agencies in different ways for a variety of reasons including:

- to ensure open and complete communication
- to maintain an ongoing dialogue
- to request on-site inspections of procedures
- to solicit the regulator's perspective
- to solicit advice for improvement
- to organize studies, tours and attend local seminars
- to serve on task forces, committees, advisory panels, and joint working groups

Outstanding compliance and open lines of communication build credibility with state regulators. Thus, company efforts focus on developing sound positions consistent with each agency's environmental goals. Companies commented frequently on the need to be cooperative and open-minded toward regulatory agency input, and to provide an atmosphere that signals a willingness to work with the states to resolve particular situations.

We try to project an image of thoughtful compliance with regulatory standards and we participate constructively in their rulemaking.

—*a New Hampshire utility*

With a shared concern over providing reliable electric service (permitting new generation) and protecting the environment, we have begun to develop a cooperative approach to solving our problems.

—*a New York utility*

The most pragmatic guidance comes from a large U.S. printing firm:

1. Use local, respected consultants.
2. Start early to educate and explain.
3. Do what you say when you said you would.
4. Don't be a 'patsy.'

Other External Groups

The least productive relationships seem to occur with the media, local community groups and environmental activists. These groups traditionally have been difficult for corporations in the United States, Canada and Europe to work with, and their low ranking among respondents perhaps comes as no surprise to observers. But a few companies have had positive experiences to report:

We have been very successful in working with local community groups and communicating with them on potential environmental problems. Most community groups are willing to listen to an honest appraisal of environmental problems and in working with local industry in arriving at reasonable solutions.

—*a U.S. oil company*

Local community groups are usually willing to engage in constructive discussions leading to solutions to problems. Open and candid exchanges are possible. This is frequently not the case with federal agencies.

—*a multinational mining company*

Table 10: Working Relationships with Outside Groups (by Rank)

Outside Group	*Aggregate*	*U.S.*	*Canada*	*Europe*
National/federal regulatory agency	5	4	3	4
Regional/state regulatory agency	2	2	2	2
Local regulatory agencies	3	3	5	3
Environmental activists	8	8	8	7
Local community groups	6	6	6	5
The media	7	7	7	5
Other companies in the same industry	1	1	1	1
Other industries in the same region	4	3	4	4

For percentages see Appendix, Table 7

Key Issues of Company Concern

For this study, companies were asked to identify issues in which their firms are actively involved. On issues of primary concern to the company — where the level of interest is reflected by an active lobbying effort, the support of advocacy groups that espouse the corporation's position, or the assignment of company staff and resources to a particular issue — companies are described as being "actively involved." These issues tend to be those thought likely to involve legislation that would — or could — impede a company's manufacturing or marketing operations.

A list of issues that companies could choose from was provided in the survey. The issue topics selected for the survey come from: a polling of corporate, government, and conservation officers and a regular review of secondary sources such as industry surveys, public opinion polls, tracking of media coverage, monitoring of legislative initiatives, and so on. In total, 35 separate issues were identified.

Issues are weighed in two ways in this report. First, companies report on their degree of involvement and concern (see Appendix Table 14). Second, companies are asked to identify the single most important issue affecting their firms, selecting from among the 35 issues available (see Table 11). Third, they are asked to look ahead to the issues expected to be most significant in the next five years (see Table 12). Clean air, toxic waste disposal and worker health and safety head the list of issues.

The five most important issues by frequency of mention are: (1) worker health and safety; (2) clean air: toxic air pollution emitted from stationary sources; (3) emergency management; (4) hazardous and toxic chemical waste disposal; and (5) toxic solid waste disposal. Curiously, emergency management was an issue in which companies were actively involved, but it did not appear in the ranking of single issues of most concern, or on the list of those issues expected to be significant in the next five years. When asked about this apparent discrepancy, companies responded that this was, for them, a continuing operational concern requiring extensive use of resources, but not a policy issue.

Workers' Health and Safety

Employers' concerns about the health of their workers and the safety of their workplace cut across all industries and almost all of the other issues that participants in this study addressed. The hazardous and toxic waste disposal problem, for example, affects not only the community at large, but presents hazards for the handlers as well. To complicate matters further, issues that were once classified as purely safety problems (e.g. gas pipeline leaks) are now also classified by companies as environmental issues. The same holds true, for example, for electrical utilities regarding low-level radiation from electromagnetic fields.

New regulations addressing right-to-know and occupational safety and health, are causing companies to step up their internal programs. Consolidated Rail Corporation (Conrail) has put in place "extensive programs for training employees regarding the use, handling and transportation of hazardous materials." Other railroad companies find the regulations burdensome:

> Worker health and safety issues in the rail industry context have grown to the point that the financial viability of the industry will be put at risk unless structural, legislative and regulatory changes are made. A continuation of the current trend of increasing costs... cannot be tolerated.
>
> —*a Southern railway*

Many new workplace regulations have been put in place as a result of the increasing ability to measure indoor air pollution. In 1950, pollutants could be detected at one part per million. By 1965, the gas chromatograph, the basic instrument to measure concentrations of volatile organic compounds, could detect pollutants at one part per billion. That is to say, in a swimming

Table 11: The Single Issue of Most Concern to Companies: Top Five Choices (by Rank)

	U.S.	*Canada*	*Europe*
Worker health and safety	1	1	1
Clean air (pollution from stationary sources)	2	3	—
Hazardous and toxic chemical waste disposal	3	2	2
Acid rain	4	—	—
Toxic solid waste disposal	5	—	—
Clean water (surface water contamination)	—	4	—
Greenhouse effect: global warming	—	5	—
Non-toxic waste disposal	—	—	—

** In Europe, the responses beyond the first two top issues were too scattered to be of measurable significance.*

Table 12: Issues Expected to be Most Significant in the Next Five Years (by Rank)

	U.S.	*Canada*	*Europe*
Clean air (pollution from stationary sources)	1	3	—
Toxic solid waste disposal	2	3	—
Acid rain	3	4	—
Hazardous and toxic chemical waste disposal	4	1	—
Non-toxic waste disposal	5	2	1
Clean water (surface water contamination)	—	1	—
Greenhouse effect: global warming	—	3	—
Worker health and safety	—	3	—

In Europe, the responses beyond the first-ranked issue were too scattered to be of measurable significance.

pool 40 feet long by 20 feet wide by 6 feet deep, 2 drops of pollutants could be detected.

Until recently, industry was expected to measure its own indoor pollutants, and the practice was largely unregulated. The science is relatively new; indoor air quality was not recognized as a problem until the energy crisis of the 1970s produced a construction boomlet of air-tight buildings. As scientists became aware of the new crop of health problems, they found workplace hazards similar to those at home.

By January of 1989 the Labor Department's Occupational Safety and Health Administration (OSHA) limited worker exposure in 164 substances for the first time and strengthened the limits on 212 substances that are already regulated. This move is expected to significantly reduce the risk of illness for more than 21 million workers. As expected, consumer groups and labor organizations do not feel the new rules go far enough; some businesses say the rules went too far. [3]

For the estimated 40 million users, OSHA does not regulate video display terminals (VDTs). Nearly everyone uses them; their capabilities in word processing, filing, communicating and calculating have made them indispensable to most organizations. With this has come a host of medical complaints alleging a link to VDT use—deteriorating vision, carpal tunnel syndrome, cumulative-trauma disorders, musculoskeletal complaints and increased miscarriages and birth defects.

In New York State, Suffolk County passed — and then modified — legislation to regulate VDTs. Employers will have to notify workers of all potential health hazards and provide training programs to help operators recognize the early stages of symptom development.

In Canada, companies cited the difficulty of complying with stringent regulations while employing a multicultural work force. "The major problem is the education of our work force. We're dealing with people of varying educational levels in fairly sophisticated scientific concepts."

In some cases workers' health and safety and environmental issues are housed in different departments, complicating effective management.

> Workers' health and safety ranks just above environmental issues in the company priorities but they are managed separately by two departments. Workers' health and safety issues are a social responsibility for us and are believed to be a major factor influencing productivity.
>
> *—a Canadian oil company*

European company experience was discussed most candidly by chemical company respondents. From an environmental point of view, workers' health and safety means efficient control of chemicals by the company at all points in the processes. For these companies, chemi-

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[3] Irvin Molotsky, "New Limits Imposed on 376 Substances Found in Workplace," *New York Times*, January 14, 1989, page 1:1.

Primary Elements of Corporations' Environmental Strategies

With surprising uniformity, companies are putting most of their resources into new pollution control devices, improving existing pollution control devices, and complying with federal and local environmental regulations. Only in the United States is there an emphasis on source reduction, attempting to control pollution as a first rather than a last step. This may be in anticipation of the market incentives which are a part of the new Clean Air Act.

U.S. Corporations	*Percent of Firms Using Strategy:*	
	Nationally	*Internationally*
1. Installation of new pollution control devices	86%	41%
2. Control of pollution through product and package redesign	51	21
3. Improvement of existing pollution abatement	87	38
4. Changes in raw materials to reduce pollution (source reduction)	77	34
5. Working voluntarily towards company environmental standards and goals	60	27
6. Compliance with federal and local environmental regulations	76	36
7. Combination of 5 and 6	63	28
8. Lobbying to change environmental regulations	65	11

Canadian Corporations	*Percent of Firms Using Strategy:*	
	Nationally	*Internationally*
1. Installation of new pollution control devices	90%	32%
2. Control of pollution through product and package redesign	52	20
3. Improvement of existing pollution abatement	91	30
4. Changes in raw materials to reduce pollution (source reduction)	64	19
5. Working voluntarily towards company environmental standards and goals	52	19
6. Compliance with federal and local environmental regulations	71	23
7. Combination of 5 and 6	60	22
8. Lobbying to change environmental regulations	46	13

European Corporations	*Percent of Firms Using Strategy:*	
	Nationally	*Internationally*
1. Installation of new pollution control devices	68%	48%
2. Control of pollution through product and package redesign	45	39
3. Improvement of existing pollution abatement	71	48
4. Changes in raw materials to reduce pollution (source reduction)	47	40
5. Working voluntarily towards company environmental standards and goals	32	26
6. Compliance with federal and local environmental regulations	53	37
7. Combination of 5 and 6	37	32
8. Lobbying to change environmental regulations	32	16

cal control in practice means getting reliable, up-to-date information on the physical, chemical, toxicological and environmental properties of chemicals, and putting this information into use to control occupational and environmental risks.

Workers' health and safety appears as the single issue of most concern now to companies in all three regions surveyed, yet when questioned as to the issues expected to be most significant in the next five years, it is ranked third in Canada, and not at all in the United States and Europe. Existing rules and legislation in the U.S. and Europe compel responsible action. Canadian law is not that stringent now, but it is expected to become more so within the next several years.

Clean Air

For many companies the single most important issue has to do with air, be it acid rain, the greenhouse effect, global warming, or air pollution from stationary sources. Driven by the realities of a deteriorating global environment, business and industry is becoming increasingly involved in a series of global agreements and national "command and compel" legislation.

This involvement was particularly crucial in the United States during the long debate over amendments to the Clean Air Act. For the first time since the 1977 amendments, a sweeping rewrite had a chance of passage. By settling for less stringent standards and a slower cleanup schedule than originally drafted, the Senate met Administration demands for anti-pollution measures that do not hurt the economy.

When negotiations started in January 1990, the Administration estimated the annual cost of the Senate bill as $41 billion and the annual cost of the Bush proposal as $19 billion. The final law is estimated to cost $25 billion a year by early in the next century.

The bill, for the first time, imposes federal controls on acid rain and its chief ingredient, sulfur dioxide. Emission of sulfur dioxide from power plants would be reduced 50 percent by the end of the decade and then held constant at that level. Acid rain control was not a bone of contention: both sides wanted a 10 million ton reduction in sulfur dioxide emissions from power plants in the Midwest by the year 2000, with the first reduction coming in 1995.

The cost of reducing sulfur dioxide will place a heavy burden on the utilities and customers. Some concessions were made, among them increased credits for companies that decrease pollution below mandated levels. These credits may be sold to other utilities who could use them to build new electric generating plants.

Proponents of nuclear power, both in the United States and abroad, have found some grudging allies among those ready to abandon fossil fuel. From a European automotive manufacturer:

> The development of nuclear power sources as the best medium-term solution to the excessive use of fossil fuels will be a major contributor to reducing air pollution, acid rain and checking the greenhouse effect.

Air pollution from stationary sources ranked second as the single most important issue for U.S. companies, and third for Canadian firms (see Table 11, page 24). When asked what issue was expected to be the most significant in the next five years, air pollution from stationary sources ranked first in the United States and third in Canada. This issue was considerably less important in Europe.

When describing the elements of their environmental strategies, more than three-fourths of the U.S. respondents are installing new pollution control devices, improving existing pollution abatement equipment and processes, and changing their raw materials in order to reduce pollution at the source (see box, page 25). This is also the government's first step toward achieving clean air. In Canada, the key strategy — at 91 percent — is improving existing pollution abatement.

A number of companies believe the government goes too far. "Air toxics is an issue which has overtaken the clean air debate. Little science (toxicology, epidemiology) is available which supports the extreme measures being considered," says an oil company executive. "Substantial economic disruptions can be expected to occur. Impacts of the proposal, particularly the disproportionate cost to marginal benefit, seems to elude the public."

Companies currently complying with the new source performance standards say that their newer equipment is successful, to a large extent, in limiting the emissions of toxic air contaminants. But further emission reductions on this equipment would be extremely difficult, and very costly.

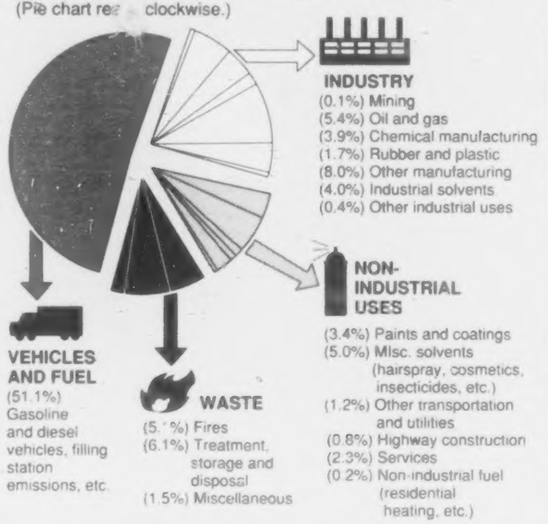
> Regulations that include older sources and others not presently covered is likely. This will result in further research and expense and perhaps in the installation of expensive controls if suitable alternatives cannot be found.
>
> *—an American tire manufacturer*

Unions fear these costs may result in job loss. Under the Clean Air Act, it is estimated that by 1995 up to 6,000 jobs will be lost in high-sulfur coal mining with the possibility of another 9,000 jobs lost by the year 2000. The Clean Air Working Group (CAWG), industry's chief lobbying force in the clean air debate, maintained that the new revisions would cause industry to spend enough capital to effectively increase costs thereby stalling revenues and reducing productivity.

Exhibit 1

Ozone: Sources of a Threat On the Ground

Estimated share, by source, of annual emissions of volatile organic compounds that produce dangerous ozone at ground level. The total is estimated at 23 million tons a year. (Pie chart rea[illegible] clockwise.)



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The industry coalition, led by CAWG, worked together successfully for most of the 1980s to block stronger air pollution laws; they rarely cut separate deals that might harm other businesses. This was not difficult during the Reagan Administration because the affected industries had a strong friend at the White House and everyone was perceived to be treated fairly. Under the new Clean Air Act, there are divisions between industries and sometimes between companies in the same industry. The utility and coal industries are on opposite sides of the fence. Oil and automobile companies are split, as are coal and natural gas industries. Tighter tail pipe emission standards which put the burden on the auto industry, and cleaner low-sulfur coal producers capturing market share at the expense of high-sulfur coal producers are but two examples of these splits.

CFCs/VOCs: Phasing Out

The phaseout of two compounds is causing major industries to retool: chlorofluorocarbons (CFCs) and volatile organic compounds (VOCs). As early as 1967 California regulations identified three groups of photochemically reactive solvents, hydrocarbons and other compounds which, when emitted, react with the ultraviolet portion of sunlight to produce low level ozone, a major component of smog. The EPA limits ozone emissions to 0.12 parts per million; air-pollution control districts that exceed the limits must institute programs to reduce emissions. This restriction affects virtually every business that puts paint to metal. Many areas of the country experiencing deteriorating air quality have opted to limit VOCs in architectural coatings. To meet new requirements the paint and coating industry has phased out old products and developed new ones.

The industry continues to grapple with the solvent component of paints; the volatile, evaporative liquid that improves application. Wherever possible, water is being substituted for solvents. Companies are also changing the normal ratio between solids (pigments and resins) and solvents to bring the process into compliance. These new high-solids paint formulations require new resins, new additives and new methods of manufacture. Some companies are balking:

> The proposal to include methyl chloroform in the proscribed list of ozone-destructive substances under the Montreal Protocol is, we consider, an overkill decision. The effect of the chemical is very small in comparison to CFCs. The replacement of aqueous systems is only practicable for certain operations, and other solvents increase flammability hazards. Furthermore, increasing aqueous systems adds further burdens to effluent disposal and increases possibilities for water pollution.
>
> —*a British auto manufacturer*

U.S. firms have taken a more proactive position than the U.K. company quoted above. Benjamin Moore, Flecto, Glidden and Sherwin-Williams are among the major firms in the industry developing low-VOC coatings. But other companies using coatings are considering dropping major product lines because the costs of reaching the last 10 percent of compliance are simply too high. "If we stop manufacturing because compliance is too costly, other countries with lower air quality standards will just pick it up," writes an an aluminum company executive. "What have we accomplished? Emissions float across national borders; we're merely exporting our own environmental responsibilities."

The aerospace industry is particularly hard-hit and says it needs more time to reach compliance.

> Paint reformulation is the key answer but it won't happen overnight. The EPA should work with industry to develop new low-volatile organic compound paints and processes rather than forcing installation of control equipment.
>
> —*an aircraft manufacturer*

> In the aerospace industry, we are constrained by Department of Defense military specifications that do not readily allow substitution of materials in our processes. Cleaning and painting of aerospace parts and assemblies currently utilizes

> chemicals that are hazardous materials containing air contaminants. In addition, the manufacturing of aerospace equipment is not done on a steady-state assembly line production basis. Therefore, we must continue to fight for 30-day averaging of these chemicals versus a 24-hour limit accountability.
>
> *—an airframe producer*

Exhibit 1, on page 27, shows VOCs contribution to the state of ground-level ozone, the major component of smog, and its stationary and vehicular sources.

"Stratosfear"

Stratospheric ozone is very different, and escalating fears of damage to the upper ozone layer have resulted in increasing bans on the manufacture of CFCs. Chlorofluorocarbons are cheap, nontoxic gases used primarily as refrigerants and aerosols. At ground level, their release is harmless, but once CFCs reach the upper atmosphere, they destroy the layer of ozone that absorbs much of the ultraviolet radiation of the sun. The failure to curb production of CFCs is expected to lead to an array of health problems, including dramatic increases in eye cataracts, skin cancers, and premature mortalities. In the United States, CFCs are used in over 100,000 commercial building air conditioners, 40,000 supermarket display cases, 90 million cars and trucks and over 100 million refrigerators.

All major industrialized countries have signed onto the Montreal Protocol, a global agreement to cut CFC use in half by the year 2000. This agreement has placed a severe burden on responsible companies. The chemicals industry, for the first time, is phasing out an entire group of compounds for purely environmental reasons. Du Pont, committed to spending $1 billion over the next decade converting its plants to a less-hazardous product,[4] estimates that the industry will have to spend upwards of $5 billion over the next decade developing alternatives. "In the United States alone," Du Pont reports, "there is now more than $135 billion worth of installed equipment dependent on the current CFC products."

Although Du Pont has been joined by Allied-Signal in the United States and Imperial Chemical Industries PLC in London in developing pilot plants, problems abound in using these chemical substitutes. General Motors has tried and abandoned two substitutes for the CFCs used in their auto air-conditioners. Their third try, HCFC-22, which seems promising, requires redesign of the coolers, and probably the cars themselves—a move expected to cost hundreds of millions of dollars. To use HCFC-22, whose molecules are small and can easily leak out, a totally new air-conditioning unit is required.

This kind of problem has led companies that use CFCs for cleaning electronic circuit boards to rethink the possibility of chemical substitutes. Northern Telecom Ltd. of Canada has introduced a new system using water for this purpose, while AT&T has developed a new technology that eliminates the cleaning process in circuit-board manufacturing.

Hazardous and Toxic Chemical Waste Disposal

More than 30,000 U.S. companies are under public and private scrutiny as a result of Title III of the Superfund Amendment and Reauthorization Act (SARA). The law requires companies to make available detailed information on the storage and handling of hazardous and toxic chemicals in and around their facilities. Title III applies not only to chemical companies; it includes all firms that use, import or manufacture any of more than 300 identified substances.

Industry sees the Superfund process as burdensome and costly, yet essential to the nation's welfare. Particularly demanding are SARA's toxic chemical release reporting requirements. Businesses with 10 or more full-time workers who use or handle more than specified threshold quantities of certain chemicals are required to report routine releases of over 300 listed toxic chemicals. Information must include the quantity of each chemical released into air, water or soil; estimates of quantities at each site for the preceding year; a description of waste treatment methods and evaluations of their efficiency. The right-to-know provisions of the legislation mandate that this information be made available to communities.

> The hazardous wastes issue is especially important to all industries due to the public preconceptions; it is almost impossible to site a center to handle hazardous wastes. The public demands complete removal of all hazardous wastes, yet still demands the goods and services that create it. The federal government continues to expand the list of hazardous substances, sometimes with dubious data, and then it almost takes an act of Congress to correct these mistakes to remove errors from listing.
>
> *—a Southern textile firm*

As companies retooled to follow the law, there was a brief flurry of non-compliance. Companies may be subject to fines of up to $25,000 per day, making non-compliance simply too costly an option.

Endless Liabilities

Many companies are faced with cleaning up sites that are no longer controlled by the corporation, sites that until recent years were in compliance or had no regulatory requirements. These sites typically involve large remediation costs with "joint and several" liability for all contributing parties. "We are concerned with the direction environmental law has taken and the deviation from established legal precedents," writes a manager from an Ohio construction company. "We should attempt to develop a more positive relationship between corporations and government agencies with a means of resolving differences without rushing to litigation."

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[4] E. Patrick McGuire, *Environmental Progress Since Earth Day 1970*, The Conference Board, Research Bulletin 243, 1990.

A New Jersey utility's environmental affairs director comments:

> The cleanup of former manufacturing sites is a big issue for us. These sites were closed down or sold off in the 1950s prior to the realization of many environmental concerns. These sites are presently in varying land uses; it's difficult to gain access, to implement remedial actions. And there is continuing uncertainty over how clean is clean.

Classification of toxics adds to the already high level of confusion. A chemical in one process is considered toxic, while the same chemical in another process or context is not. Strict interpretations of regulations require classifications of some side streams as hazardous waste. Historically, industries like natural gas, for example, have sold these commodities as product to be reused or recycled. Classification as a hazardous waste has resulted in the disposal of a valuable resource and changed a revenue source into an expense for those companies affected.

A new category of liability issues has appeared. Parent companies are now liable for the environmental Superfund liabilities of a subsidiary. Kayser-Roth, a New York apparel manufacturer, has been ordered to pay $846,000 for environmental cleanup costs already incurred at a former Rhode Island textile mill. Additional costs for Kayser-Roth could run to the millions as the firm will be held liable for future costs. As the sole shareholder until the subsidiary's dissolution in 1979, the court held that Kayser-Roth had full control over the company's operational and fiscal decisions. The decision significantly broadens the interpretation of who can be held liable under the Superfund law, and pierces the "corporate veil" that some polluters hide behind.

One electrical equipment manufacturer states that:

> The Superfund program is out of control. Fifty to sixty percent of the money is spent in court or for identifying responsible parties. If more money, time and effort were given to correcting the situation, a great deal could be accomplished.
>
> As for hazardous waste disposal, the 'not in my backyard' syndrome, combined with the bureaucratic nightmare of permitting procedures, severely limit options for safe disposal and recycling. Soaring hazardous waste handling costs could lead to increased illegal dumping and an increase in the cost of consumer goods.
>
> We see too much of the knee-jerk reaction of elected officials when they enact technical standards based on public opinion. The federal and state governments have the technical expertise to set standards; elected officials should broadly direct the agencies by setting goals, realistic deadlines and providing funding while making it clear that we cannot exist in a "zero risk" society.

Improving Community Relations

Companies have put time and money into building understanding of their firm's processes and practices. Some companies have recognized that the public must perceive them to be part of the solution, not just part of the problem.

Dow Chemical has produced brochures for both local communities and employees explaining its programs. Dow has also established a computer database and made it accessible to the public. Under Dow's Product Stewardship System, a Dow employee will not sell a product if he or she believes it will be used or stored in an unsafe manner.

Firms with deep roots and a long history of service to the community seem better prepared — or more willing — to take vigorous, positive action when faced with a potential catastrophe. The Eastman Kodak Company pipe rupture in late December 1988 spilled about 30,000 gallons of methylene chloride (a suspected carcinogen). Although no health problems have emerged to date, Kodak has pledged more than $100 million to study and clean up the contamination and to investigate systems and procedures to prevent future problems. This was Kodak's second problem; the first centered around reports that contaminants had seeped off company property and into the soil and groundwater supply of the adjacent neighborhoods.

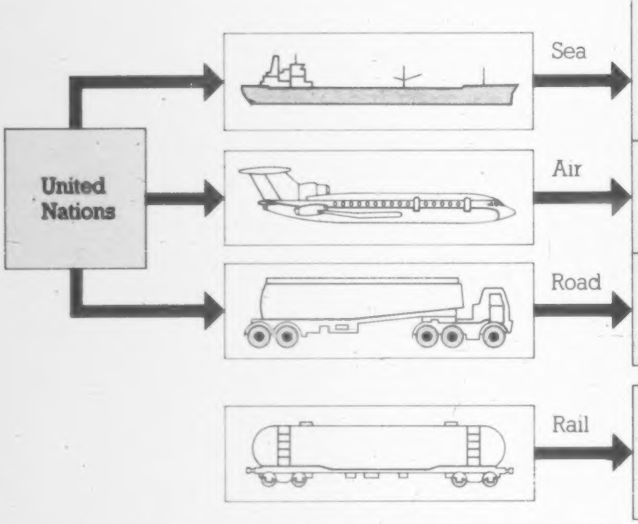
Kodak has two programs in place that are designed to restore their position and credibility in Rochester, New York, the company headquarters. The first is a home-owner assistance plan, designed to stabilize property values. It provides home-improvement grants and mortgages and pays moving expenses for those who decide to leave the area. The second is a five-year program to restore and/or replace 1,000 underground chemical tanks. Kodak also plans to overhaul its smokestack system to reduce emissions by two-thirds over a six year period. *Fortune* magazine consistently ranks Kodak among the top three companies in community and environmental responsibility.

Trade Associations

Following the Bhopal accident, the U.S. Chemical Manufacturers' Association (CMA) began the

Exhibit 2

International transport regulation for chemicals



International Maritime Organisation

- Sea transport of packed products worldwide. Regulations are published in the International Maritime Dangerous Goods Code and MARPOL Annex III.
- Sea transport of bulk products worldwide, Regulations are published in:
  - Code for Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk.
  - International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk.
  - Regulations for Control of Pollution by Noxious Liquid Substances in Bulk (MARPOL Annex II).

International Civil Aviation Organisation

- Concerned with air cargo transport worldwide. Regulations are published in the Technical Instructions for the Safe Transport of Goods by Air

Inland Transport Commission

- Concerned with international transport by road. Regulations are published in the European Agreement for the International Carriage of Dangerous Goods by Road

International regulations for transport by rail are developed and controlled by a representative body comprised of participants from the various national railway authorities. Regulations are published in the International Regulations for the Carriage of Dangerous Goods by Rail (RID).

Source: Shell Briefing Service, Shell International Petroleum Company Limited

Community Awareness and Emergency Response Program (CAER). Their plan is to remove the threatening mystique of the chemical industry by providing an opportunity for dialogue between plant managers and community leaders. When Title III became law, they added another component to CAER dealing with compliance and communications requirements.

The National Association of Manufacturers (NAM) has been active in supplying information to its members on how to handle compliance problems. The largest specialized group, The National Solid Waste Management Association, numbers Browning-Ferris and Waste Management, Inc. among its 3,000 members. Most of the members are in the garbage-hauling business, but there is good representation from companies involved in managing landfills, waste energy facilities and recycling center construction. Members of the Hazardous Waste Materials Advisory Council, another active and highly visible trade association, include chemical companies and railroads, as well as trucking companies, container manufacturers and pharmaceuticals firms.

Waste Reduction

Disposal methods that are entirely legal now may prove to be inadequate in the future. In a shift of emphasis, the EPA is promoting technologically interesting but, to some degree, unproven technologies to resolve these issues. A parallel effort is being encouraged to reduce the volume of hazardous wastes at the point of generation.

Ciba-Geigy responded to a public and government furor over groundwater contamination at its Toms River, New Jersey plant by eliminating the use of thousands of pounds of mercury.[5] After receiving the highest environmental fine ever imposed by the State of New Jersey and further battering by being designated a Superfund site, company scientists developed a new process for producing cotton dyes, eliminating mercury as a catalyst.

Companies like Borden, Monsanto, Exxon, 3M and Dow have saved hundreds of thousands of dollars by waste reduction methods. Their stories have been well-documented and well-publicized.[6] Industry critics find it puzzling that so few other waste-generating firms have followed their lead. INFORM, an environmental research organization, finds this to be the case:

> INFORM's research found that the focus within waste-generating firms has been on the proper handling of wastes to prevent environmental concentrations from reaching harmful levels. Most large firms have established environmental departments to make sure they comply with or even anticipate

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[5] Claudine Schneider, "Hazardous Waste: The Bottom Line is Prevention," *Issues in Science and Technology*, Washington, D.C., Summer 1988, p. 75.

[6] See Robert Steyer, "The Toxic-Emissions Learning Curve," *Across the Board*, December 1988, and E. Patrick McGuire, *Environmental Progress Since Earth Day 1970*, Research Bulletin 243, 1990.

regulatory requirements, and their environmental managers are charged with overseeing the handling of wastes already created.

> Process operations managers, on the other hand, are ideally situated to identify sources of waste, being intimately familiar with the various stages of plant activity. But they generally have had no authority to make changes in plant operations to address environmental problems.
>
> In short, the people who could affect hazardous waste production at the sources are not called on or given strong incentives to do so. Meanwhile, government officials regulating plants focus on pollution control, treatment, and disposal rather than sources and prevention.[7]
>
> —*Joanna D. Underwood*
> *President, INFORM*
> *New York, NY*

This does not improve the public's perception of the industry, and it increases pressure on elected officials to ameliorate what are seen as potentially catastrophic events.

> The image of the chemical industry is poor...Reactions of mistrust and fear in the public drive the politicians to take hastily any "remedy" good or bad. The chemical industry has to become recognized not as a problem, but as part of the solution.
>
> —*a Belgian chemical company*

Waste Transport

Most chemical products are not used on the sites where they are manufactured, and in Europe this means transport across several national borders. Western Europe moves about 220 million tons of chemicals per year by air, sea, rail and road transport; a shipment of hazardous wastes crosses a national frontier every five minutes. This is a highly regulated activity, with comprehensive legislation developed by international conventions spearheaded by the United Nations (see Exhibit 2 on page 30).

Hazard categories are assigned under a system of classification which divides toxic wastes into various categories (for example, highly flammable, corrosive, or explosive). Each category has its own set of regulations stipulating how it should be handled during transport, the type of containers that should be used, labeling, liability, etc.

European companies are improving their capacity to recycle and recover raw materials in-house; they find it cost-effective as well as environmentally sound.

> We recycle over 90 percent of the organic solvents we use. By the use of modern engineering techniques, emissions to the atmosphere are steadily reduced. We target those remaining sources which involve substances of ecological significance in the first instance. However, we regard all emissions as wasted resources.
>
> —*a British pharmaceuticals company*

The United Nations is one of four major international organizations regulating and monitoring hazardous wastes. The others are the Organization for Economic Cooperation and Development (OECD), the Commission of European Communities (EC) and the North Atlantic Treaty Organization Committee on the Challenges of a Modern Society (CCMS).

OECD is the most active organization, and recommended in 1976 that member countries adopt comprehensive waste management policies. Charged with promoting the economic growth of member countries — and assisting less-developed countries — OECD was in a position to be aware of waste shipments from the former to the latter. As a result, OECD's coordinating system now matches national obligations for monitoring and control whenever wastes cross national frontiers.

The OECD is without supranational authority; it cannot adopt, monitor or enforce legislation. These powers fall to the EC; governments formally commit themselves to implement EC regulations and directives; they are legally required to do so. The EC's policy on commercial chemicals, more than 20 years old, was reinvigorated by the amendments to the Treaty of Rome in the Single European Act of 1987[8] placing environmental protection in a key policy position.

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[7] Joanna D. Underwood, Letter, *Issues in Science and Technology*, Washington, D.C., Fall 1988, p. 21.

[8] The Single European Act is the engine that drives the economic integration of Europe, "1992."

Company Initiatives

Some of the businesses affected by environmental regulations can expect a slowdown in revenues and an increase in costs. Other companies, however, plan to clean up on the cleanup. As environmental issues come into their own in the 1990s, the investment community sees opportunities in trash disposal and pollution abatement technologies. The solid waste business, for example, is particularly attractive: during the study period, Smith Barney's index of stocks showed a rise of 59 percent for solid-waste business against an overall 27 percent stock market rise. The well-publicized scarcity of landfill sites, and the problems large cities have in coming up with alternative plans, make investors comfortable with the projected long-term rise in solid waste disposal stocks.

Analysts also see the long-overdue cleanup campaigns of the Departments of Energy and Defense as a boon to investors. Pollution abatement spending by both corporations and governments is on the rise, and investment opportunities are expected in businesses that specialize in air and water filtration systems, recycling, and machinery and tool cleaning.

The anticipated rises are not limited to the United States. Expenditures are expected to increase steeply in both Western and Eastern Europe. Some European environmental-management programs are moving ahead at a faster pace than they are in the United States. These include recycling, incineration, trash-to-energy plants and consumer awareness. Europe is expected to make major expenditures on environmental systems as part of the 1992 economic unification plans. Investment analysts predict a rise in investment in environmental management systems to go from $50 billion to $150 billion over the next decade. In Eastern Europe, where environmental conditions are horrendous due to utilities' burning of sulfurous brown coal, there is expected to be demand for new environmental techniques. How this is to be paid for is still a mystery.

Some New Ventures

To close the $750 million-a-year gap expected from the phaseout of CFC production, Du Pont has formed a safety and environmental resources division. By the time the company has phased out CFCs, the new division should be delivering annual revenues of $1 billion.

Westinghouse has made a substantial investment in cleanup technology. Its 1987 acquisition of an engineering and remediation company was the beginning of the Westinghouse Environmental and Geotechnical Services Inc., with 40 branch offices in the United States.

Some companies moved too quickly. Safer, Inc.'s success in selling biodegradable pesticides—doubling its sales from $10 to $20 million in one year—has not been matched by profitability. Encouraged by its sales to the home gardener, Safer attempted to break into the $3 billion agriculture and commercial pesticide business. Developing too many products too fast to maintain inventory and with applications too limited for the commercial grower, Safer has now returned to a more modest product line.

Responding to the anticipated restriction on the use of VOCs, Union Carbide has developed a spray paint which uses carbon dioxide to replace up to two thirds of the formerly used hydrocarbon-based solvent which, when it mixes in the air with nitrogen, forms ozone. Although carbon dioxide is itself a recognized pollutant, Union Carbide claims the gas used will be collected by-products of other industrial processes.

Caveat Emptor

Manufacturers are repackaging everything from disposable diapers to trash bags in an attempt to convince the consumer that the company product is "environment-friendly." Pressure on companies came from retailers, responding to consumer concern, who encouraged manufacturers to alter their products and packaging. Dayton Hudson's Target discount unit has gone even further and developed an environmental brochure for distribution at cash registers. It supplies tips to customers on steps they can take at home to improve the environment.

Independent surveys show that a company's reputation on environmental issues has an effect on consumers' purchasing decisions. In a series of U.K. opinion polls reported in the October 24, 1989 issue of *The Economist*, 42 percent of British respondents made a deliberate choice in buying a "green product" once in the preceding year—up more than 100 percent from the year prior. Furthermore, respondents were willing to pay more for environmentally safe products.

In France, a new biodegradable trash bag is made from corn extract. West Germany's AEG launched an advertising campaign in the United Kingdom to promote the environmental advantages of its more efficient dishwashers. Loblaws, a Canadian supermarket chain, has developed its own line of "green" products, primarily trash bags, gardening products and cleansers.

In the United States, Procter and Gamble has marketed its first product pitched straight at the environmentally aware consumer. The new Downy Refill comes in a large plastic container and is designed to be measured into a used plastic Downy container and mixed with water to make fabric softener.

Sweden and West Germany were the European leaders in environmental marketing, taking the initiative in developing environmentally sound products. France and Britain caught up quickly. Products appeared on supermarket shelves with labels proclaiming them to be environmentally sound and explaining their beneficial features. Some claims, however, were found to be unsubstantiated, leaving manufacturers in the awkward position of looking worse than they did before the introduction of new packaging.

The rush to "green" products has been so swift that charges of fraud are beginning to be levied against companies whose products may prove to be less than claimed. For example, fast-food foam containers and other food wraps are labeled recyclable but there are little or no facilities or programs to facilitate recycling. In another case, BP Oil's new "Supergreen" gasoline was reported to contain several toxic compounds.

Recycling

The explosion of used packaging materials, either recyclable or otherwise, presents a major industrial impact and challenge. Not enough materials are truly recyclable and the facilities and capabilities to process recyclable material are inadequate. However, the number of consumers willing to recycle continues to grow.

- Wal-Mart, the giant discount retailer, has asked each of its suppliers—more than 7,000—to provide the stores with more recyclable or recycled products.
- Amoco is expanding its operations in plastics recycling. Amoco Foam Products and Amoco Fibers are major suppliers to the food-service and carpet industries and make extensive use of recycled plastics.
- Enviro-Chemie of Zurich has developed a machine which recycles the water from car wastes, feeding it back into a tank where a combination of aluminum sulfate, calcium carbonate and volcanic ash extract the oil and sludge.
- H.J. Heinz Co. will use plastic bottles made of polyethylene terephthalate (PET) which can be recycled through a network of PET centers. This will replace their old plastic bottles whose complex make-up virtually precluded recycling.

Source Reduction

While most of the recent effort has been directed at waste disposal or recycling, attention is beginning to be paid to pollution prevention, or source reduction, as it is often called.

- Dow Chemical is changing a production process at one of its polyethylene plants that is expected to decrease wastes by a million pounds per year.
- Digital Equipment Corporation has saved millions of dollars minimizing packaging materials and using smaller containers.
- 3M is spending more than $80 million to improve or replace their underground storage tanks for liquids and gases. 3M will complete this in the United States by 1992 and worldwide by 1993, well ahead of the United States regulation which calls for compliance by 1998. 3M's Pollution Prevention Pays program focuses on practices that reduce pollution and cut company costs at the same time. Since its inception in 1975, the program has saved 3M over $1 billion.

Public Perception/Building Credibility

"Corporations don't do a very good job of letting the public in on their efforts to be good citizens. The press does a job on the bad news, while we on the inside don't do much about the good news." This comment, from a chemicals company executive, was repeated across companies and industries. Many respondents hold that it is no longer sufficient for a company to promulgate sound environmental policies and programs; the public must perceive this to be so, or sales of products and services may suffer.

Industry has spent enormous amounts of money on research in an effort to convince the public that their products are not harmful. Indeed, some of the sounder research is done by companies themselves or their industry organizations. The American Petroleum Institute (API), the Chemical Manufacturers Association (CMA), and the Electric Power Research Institute (EPRI) have all produced scientifically valid studies. The trouble is that often the public does not buy the results—they are seen as tainted.

Despite the present quality of industry-sponsored research, the public remembers past company-sponsored studies of asbestos, cigarettes, and dioxins. In these cases, critics say, findings delivered by company scientists were either ignored by management, or kept from the public. Industry-backed institutes are said to continually struggle against the public conviction that their conclusions are shaped by the company line.

The bottom-line pressures facing companies today, combined with the growing costs of research on problems which are interdisciplinary in nature, argue for pooled resources and industry-wide studies. EPRI, for example, operates a $379 million annual budget coming entirely from its 700 members.

One of the boldest industry-wide moves followed the *Exxon Valdez* spill. Shortly after the spill, the oil industry regrouped and announced a $250 million program to prevent major spills and to combat the damages should spills occur. An independent agency will create five regional response centers staffed and equipped to handle catastrophic spills anywhere in the United States. The American Petroleum Institute, the industry's major trade association, played a key role in organizing the industry effort to convince an aroused public that oil companies are responsible citizens.

When the *Exxon Valdez* ran aground off Alaska, it triggered the most catastrophic oil spill in U.S. history (see Exhibit 3). It also, critics say, undermined the oil industry's credibility and threatened future exploration. Up to that point Exxon's safety and pollution record was among the best in the industry. In two years of cost cutting, company management eliminated duplication in managerial layers, pushed costs down and held net income steady. But a company's chairman is still held responsible, in the court of public opinion, for his company's environmental performance.

In an interview with the *Wall Street Journal*, Lawrence G. Foster of Johnson & Johnson said: "Regardless of how many public relations people you have, the chairman is the single most responsible spokesman a company has." This was certainly true of J&J following the poisoning of Tylenol in 1982. Within 48 hours, Chairman James Burke was speaking with reporters. Union Carbide, following the Bhopal chemical leak that resulted in the death of thousands, was also well-prepared, and within two days Chairman Warren Anderson held a news conference. By the next day he was en route to India. Exxon reacted more slowly and critics pounced on this slowness.

> When you have something which hasn't been handled right and it shows up on your TV screen in color, you've got a problem. If Exxon had been there on Day One, they could have played quite a different role in directing what had to be done. Once you get other people deciding what they want to be done, and you want to do something different even though it may be better, you're at a disadvantage.
>
> If you are not in a position to take control, to establish your plan as THE plan, you are then faced with a pretty broad collection of interests. If you're there right at the beginning, you're in a position to be a major influence with the federal agencies, the Coast Guard, the Department of the Interior and with the State of Alaska.
>
> —*an oil industry spokesperson*

Exhibit 3: Oil Disasters, Compared

World's Largest Tanker Spills		
Amoco Cadiz runs aground off the coast of France	March16, 1978	1,620,000 barrels
Atlantic Express in collision with second ship off Trinidad	July 19, 1979	1,020,000 barrels
Torrey Canyon grounded off Isles of Scilly	March 18, 1967	860,000 barrels
United States' Largest Tanker Spills		
Exxon Valdez runs aground off Valdez, Alaska	March 24, 1989	240,000 barrels
Argo Merchant grounded off southeastern Massachusetts	December 15, 1976	180,000 barrels
Burmah Agate burns after a collision in Galveston Bay, Texas	November 1, 1979	62,000 barrels

Source: "Oil & Dirty Hands," The New York Times, April 5, 1989, p. A28. (Based on Golob's Oil Pollution Bulletin.)

A Summary of the Valdez Principles

Protection of the Biosphere: Signatories will try to eliminate pollutants that damage the air, water or earth.

Sustainable Use of Natural Resources: Pledges use of renewable resources, conservation of non-renewable materials and preservation of biological diversity.

Reduction and Disposal of Waste: Pledges minimizing and safely disposing of hazardous wastes.

Wise Use of Energy: Calls for energy efficient products and processes.

Risk Reduction: Pledges reducing environmental risks and preparing for accidents.

Marketing of Safe Products and Services: Pledges disclosure of environmental impact of products and services.

Damage Compensation: Pledges restoration of damaged environments and compensation for human injury.

Disclosure: Pledges disclosure of accidents and hazards and protection of employees who report them.

Environmental Directors and Managers: Companies agree that at least one board member will be an environmental expert. A senior executive for environmental affairs will also be named.

Assessment and Annual Audit: Pledges annual environmental audit of worldwide operations. Audit is to be made public.

Source: New York Times, September 10, 1989

The oil industry monitors itself closely. For example, Chevron conducts a continuous tracking study to try and get a feel for what the public thinks of the oil industry and individual companies. The study, which is called "The Public Opinion Monitor," measured a 15 percent drop in favorable attitudes toward the oil industry immediately after the Exxon Valdez accident.

In September of 1989, following the *Valdez* spill, an ad hoc group of institutional investors and environmental groups drafted the Valdez Principles, asking companies to take responsibility for past and future accidents (see box). Most importantly, the institutional investors control assets totaling $150 billion, much of it from public pension funds. The group is calling for, among other things, an annual public audit of a company's environmental progress and the appointment of an environmentalist to each corporate board. The "principles" are driven by the Massachusetts-based Coalition for Environmentally Responsible Economies (or Ceres, after the Roman goddess of agriculture).

Some oil companies have been more successful than Exxon in being perceived as environmentally oriented. For example, ARCO is the first company to market an alternative fuel. ARCO's EC-1 Regular is heralded as the first emission control gasoline. All lead was eliminated, as was one-half of the benzene and up to one-third of other aromatics and olefins. Sulfur was reduced by up to 80 percent and vapor pressure by a full pound per square inch below the California standard. Unlike other proposed alternative fuels, ARCO EC-1 does not require engine modification or increased costs at the pump. "I don't know whether this will mean a significant difference to air pollution," says a competitor with grudging admiration, "but ARCO is certainly saying to the consumer, 'we're trying'."

This seems to be the sentiment in Los Angeles, but in Alaska, where most of ARCO's operations are located, skeptics abound. The State of Alaska, as well as environmental groups, believe the major blame for the *Exxon Valdez* spill should be borne by the Alyeska Pipeline Company, which is more than 20 percent owned by ARCO.

BP is another company deeply affected by the Exxon spill. With the acquisition of Standard Oil, renamed BP America, half the company's assets are in the United States. BP is twice Exxon's size in Alaska, and the great oilfield on the North Slope is probably the firm's most precious asset, representing a third of its total capital. New, stringent regulations can only be damaging to BP. The firm is in the midst of a corporate "greening." The corporate logo — the highly recognizable BP shield — has become green, and the company is currently involved in projects ranging from bird sanctuaries to an atlas of the globe's rain forests to research on ozone depletion.

Chemical companies are in the forefront of the movement to reestablish credibility with the newly environment-conscious public. In an effort to keep up with changing public attitudes towards the environment, the U.K.'s Imperial Chemical Industries (ICI) has set up a major information program to inform the public about how ICI plans to cut pollution.

Managers at more than 100 plants worldwide will collect and collate data relating to waste emissions, complaints about pollution, and the extent of individual plant's compliance with local environmental laws. Plant managers are also preparing plans to improve their facilities' environmental performance. Reports will be reviewed by the board as the company tries to coordinate all its environmental activities.

ICI is Britain's largest manufacturing company, and the world's fourth biggest chemicals company. As such, it finds itself — with the rest of the industry — at the center of the debate on the influence of chemical manufacturers on the environment. The new program to cut toxic waste emissions is part of ICI's overall program on health, safety and environmental performance. It is expected to cost the company £100 million a year, about 10 percent of its total capital investment.[9]

It is not only profitable companies that are "greening up." Manville Corporation, struggling to emerge from bankruptcy proceedings, has gone ahead with an environmental makeover. Recognizing that a company can no longer merely change its logo and make public pronouncements, management has designated an independent health, safety and environment committee to audit all operations and policies. Waste sites are moving swiftly towards compliance with government-regulated standards, and scrubbers are being added to all smokestacks. Manville believes it necessary to make these changes now, despite serious financial problems resulting from its asbestos-related liabilities and the need to modernize plants and facilities.

In addition to plant modifications and public information campaigns, business is beginning to look at its own land resources as a way of building goodwill. Companies with large land holdings surrounding their headquarters, plants and facilities are beginning to use the acreage for wildlife habitats. Corporations own about 40 percent of the land in the contiguous 48 states and maintain wide buffer zones for security, safety and liability reasons and to leave room for future expansion.[10] Instead of sending out giant power mowers to keep the acreage manicured, groundskeepers are now seeding for tall grasses and shrubs digging and stocking ponds, and thinning woods (see box).

All this looks very good in the press. It makes great copy and the visuals on television bring a positive response. But the press can be manipulated to a company's disadvantage, as one oil company spokesman reported:

> When we had a river spill last July, we cleaned it up within 48 hours. When it was over, our people put together a video clip of all television coverage of the event. The media was summoned by an environmental organization which hired a diver and held a press conference on the bank while the diver went down. The diver came back up and said our company and the Coast Guard had done what they said they'd do and gave us a clean bill of health. Who was this organization? Two people. And only one of the four television stations convened for the event reported this. So you see, the public perception was of a big organization.

Corporate Projects to Preserve the Environment

—Du Pont is managing a 1,200 acre wetland at the confluence of the Saginaw River and Saginaw Bay to encourage nesting by terns. The company provided acreage along a transmission right of way to the Michigan Wildlife Habitat Foundation for a duck-nesting project and is placing nests on its utility poles.

—The Delmarva Power and Light Company constructed a breeding pond, at a cost of $50,000, to help save the Chesapeake Bay's disappearing stocks of striped bass. The utility has already released more than 40,000 fingerlings into Maryland's Nanticoke River.

—Tenneco Inc. dismantled five obsolete offshore oil platforms and moved them 900 miles to create an artificial reef for marine life off the Florida coast. The project has increased the number and diversity of marine species.

—The ARCO Coal Company went beyond legal reclamation requirements to rehabilitate a stripmined area in Wyoming in ways that would enhance biological diversity. Among other projects, it turned a sediment reservoir into a pond stocked with bass.

—The grounds of a Remington Arms ammunition plant in Lonoke, Arkansas, were enhanced for wildlife by plant employees who cleared brush to provide cover for deer and bobwhite quail, planted fruit and pine trees, and installed bluebird and duck boxes and hummingbird feeders.

> I see this in my activities outside the company, because I'm an elected official [in the local community]. People are not very willing to compromise. There's no middle ground; a few people know what they want, and there are zealots on both sides. It's the 85 or 90 percent in the middle that generally don't get involved until it blows up.
>
> One of the main things we try to do in the company is build a bridge of credibility and communication so that when we work on a project together it's because we both realize it's something that is needed. Hopefully, we open up dialogue and widen the spectrum of the agenda by just talking about it. It's important, but it takes time. It's a long-term commitment and you need people behind it, not just from the company perspec-

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[9] Peter Marsh, "ICI Sets Up Checks in Drive to Cut Pollution," *The Financial Times*, London, June 15, 1989, p. 10: SO9.

[10] Interview with Joyce M. Kelly, executive director of the Wildlife Habitat Enhancement Council, March 21, 1989.

tive. We find people volunteering on weekends and after hours — we're getting that kind of commitment from our people, and internally from the company.

Companies are looking increasingly to their Public Affairs units for results. A closer link to Public Affairs might protect the environmental officers from embarrassments such as the recent incident involving a large chemical company's claim that its trash bags were biodegradable because of a chemical additive causing it to decompose in sunlight. Acknowledging that the vast majority of landfills in which these trash bags are buried are never penetrated by sunlight, a company spokesperson admits that the product is now being withdrawn from the market.

Taking the Environmental Initiative: Chevron's Experience

In today's emotionally charged environmental issues climate, the oil industry has much at risk. Some oil companies have had difficulty dealing with the day-to-day issues and responding to crises. Others are working to make certain their companies' messages are received by all the internal and external communities affected by their products. Chevron is one of these companies.

The Vision at the Top

George Keller, the former CEO of Chevron, determined that his industry should take a leadership role in resolving environmental issues. He refused to accept the adversarial role thrust on him by critics and encouraged the rest of his industry to do the same. Keller called on technology to solve environmental problems, saying this was "the special genius of American industry." He advocated a "new philosophy" and then proceeded to see to its implementation within his own company.

Chevron saw that two of the biggest problems in California had to do with meeting significant standards in terms of air and water pollution. The company had already taken a leadership role in water problems with regard to its Richmond refinery which discharges large amounts of water into San Francisco Bay.

The second element, and the one which generates perhaps the greatest fear in the public mind, involved toxic waste. Chevron began a major in-house project to see what could be done to reduce toxic materials, recycling these materials within company plants, even changing how certain products were manufactured.

One of the key moves towards implementing Chevron's philosophy has been its participation in the formation of a non-profit risk-assessment institute. California law sets out specific objectives and limitations on carcinogens and chemicals causing birth defects and it is now possible to measure these in parts per billion. California regulations say that none of these may enter the ecosystem.

The missing element, Chevron believed, was the question of risk. For example, at what level is the quantity, or concentration, of one of these materials a meaningful risk to the population? The objective in forming the Institute for Evaluating Health Risk was to create a qualified independent agency, not in business, not in government, but one jointly sponsored to develop reasonable information on levels of health risk. The Institute allocates funds to groups of researchers to try to evaluate the levels of various materials which really constitute risk.

The company believes credibility to be a key element in successful grass roots techniques to change the way the public views its environmental efforts. Ten years ago in a Denver suburb, a problem—and the firm's response—helped change the culture within the company.

A group of homeowners in Northglenn smelled gasoline fumes in their basements. There were two service stations—Chevron and Amoco—half a mile uphill from these homes. Were they the source of the fumes? The dealer who leased and operated the Chevron station promptly examined his inventory records and assured the company that he had not lost any gasoline. His station's storage tanks were tested and showed no leaks. On that basis, Chevron denied any responsibility.

In the subsequent long and expensive lawsuit brought by the city and homeowners, Chevron discovered that it should have been more willing to help the homeowners overcome their problem. Investigations revealed the underground product lines at Chevron's station had been leaking for some time and the dealer had not adequately reconciled his inventory records to discover the large loss of gasoline. As a result of its costly and embarrassing Northglenn experience, the Chevron's policy became "fix it first and find out where the problem is later."

Communicating Environmental Policy

Chevron's current CEO, Ken Derr, continues this policy. The company's commitment to sound environmental management starts at the top. The senior officer for environmental affairs sits on the Public Affairs Committee, the group that directs policy formulation. Other members include the senior officers for the public affairs, human resources, exploration, law, and operating divisions. The Committee has three major responsibilities: to consider and counsel on major public affairs objectives; to review and approve strategies, policies and programs for public affairs objectives; and to counsel on corporate position statements.

An internal communications strategy has also proven effective for Chevron. The goal is that employees throughout the company "understand and share common objectives and goals and to provide a forum for sharing ways to increase effectiveness."

Of particular interest are the objectives that have led to Chevron's down-the-line success in policy implementation. The relevant components are:

- To project a positive message in company communications that stresses competence and commitment to serve society's energy needs.
- To maintain regular contacts with major elements of the print and electronic media. Increase involvement of corporation and operating company management in media contacts through facility tours, editorial visits, receptions, interviews and briefings. Use crisis training courses to better prepare employees to react to crisis situations and to respond to community concerns.
- To emphasize the ability and commitment to protect the environment. Work closely with environmental reporters to achieve more balanced reporting on environmental issues. Increase efforts to train more of Chevron's environmental scientists in media techniques so they can effectively articulate the company's position on environmental issues. Seek more public speaking opportunities for these scientists.
- To promote speeches by management and informed employees to targeted audiences. Capitalize on speeches through reprints and as a basis for special articles, Op-Ed pieces, press releases and follow-up interviews.
- To encourage employees to speak out about matters concerning their company. Use internal communication programs to strengthen their familiarity with public policy, environmental and other business issues that affect the company's operations.

Chevron has a variety of environmental initiatives under way, both inside and outside the company. These include participating in a Moscow trade conference, a national advertising campaign that focuses on Chevron's efforts to protect endangered species, support of the Institute for Evaluating Health Risk by supporting environmental risk assessment research at top universities around the country, and a voluntary waste reduction plan called "SMART" (Save Money and Reduce Toxins). Since 1986, the company has reduced by 60 percent the hazardous wastes it generates through routine processes and disposes to land.

Summary

The tone and character of the environmental movement has changed significantly since the 1970s. To quote Paul Huard of the National Association of Manufacturers, the debate is no longer clean vs. dirty, it's warm vs. warmer. This matter of degree rather than premise shifts the discussion to a plane where marginal or incremental costs matter more now than in recent decades. Companies facing critical bottom-line concerns are taking an active role in framing the parameters of new legislation, rather than obstructing it. At the same time, many firms are tackling environmental problems at the beginning of the production cycle, rather than waiting for restrictive government policies to threaten their operations.

Community and citizen pressures are reshaping company policies. In the United States, where environmental issues have long been considered a Democratic province, a major shift of Republican sentiment is in evidence. In Western Europe, in only a decade, Green Party members have moved from the radical fringe into city halls, national governments and the European Parliament in Strasbourg. The Canadians are adopting some of the best of Green policies, the belief that the pursuit of a sustainable economy will ease many of the pressures associated with tax policy, inflation and exchange rates.

A common thread ran through many of the interviews held for this report: the need for disputing parties to work together toward solutions that all parties can live with. Everyone seems to want the same end, but no one knows quite how to get there.

Appendix Tables

Table 1: Factors Reflected in Environmental Policy Decisions

Factor	*Aggregate*	*U.S.*	*Canada*	*Europe*
Social responsibility	32%	31%	36%	32%
Response to legal or regulatory requirements	69	72	69	58
Response to community pressure	8	8	8	7
Response to shareholder pressure	8	8	9	4
Response to liability pressure	21	26	21	4

Table 2: External Constituents' Importance to Firm (by Percent)

	Aggregate	*U.S.*	*Canada*	*Europe*
Customer	35%	39%	29%	28%
Stockholder	12	12	9	16
Federal or national governments	23	27	17	17
State or regional governments	34	29	53	20
Local governments	14	9	16	30
Environmental activists	2	2	2	2
Community	10	7	17	7
Financial community	4	5	4	3
The media	6	5	9	7

Table 3: Who Represents the Company in the United States? (by Rank)

Company Executive or Consultant	*regulatory agency representation*	*federal government hearing*	*state government hearing*	*local government hearing*	*public meeting*
Top management	7	6	7	10	8
Manager or director of corporate unit	4	5	2	3	4
Plant or facilities manager	6	10	4	2	2
General counsel	3	3	3	4	4
Environmental affairs officer	1	1	1	1	1
Public affairs officer	10	9	8	5	3
Government relations officer	8	4	5	7	7
Tax specialist	10	11	9	11	12
Financial officer	11	12	10	12	11
Trade association representative	2	2	2	9	9
Lobbyist	9	7	6	8	10
Consultant	5	8	6	6	5

For percentages, see Appendix Table 7

Table 4: Who Represents the Company in Canada? (by Rank)

Company Executive or Consultant	*regulatory agency representation*	*federal government hearing*	*state government hearing*	*local government hearing*	*public meeting*
Top management	3	2	2	4	5
Manager or director of corporate unit	2	3	1	3	3
Plant or facilities manager	4	8	4	1	1
General counsel	6	4	5	7	9
Environmental affairs officer	1	1	2	2	2
Public affairs officer	8	7	8	6	4
Government relations officer	7	6	7	8	7
Tax specialist	10	9	10	10	12
Financial officer	9	8	9	10	10
Trade association representative	5	5	3	9	8
Lobbyist	11	10	10	11	11
Consultant	6	6	6	5	6

For percentages, see Appendix Table 8

Table 5: Who Represents the Company in Europe? (by Rank)

Company Executive or Consultant	*regulatory agency representation*	*federal government hearing*	*state government hearing*	*local government hearing*	*public meeting*
Top management	2	2	3	4	5
Manager or director of corporate unit	2	4	2	3	4
Plant or facilities manager	4	8	6	2	3
General counsel	5	7	7	7	7
Environmental affairs officer	1	1	1	1	1
Public affairs officer	4	5	5	4	2
Government relations officer	6	6	8	8	9
Tax specialist	7	11	9	8	9
Financial officer	8	12	10	9	8
Trade association representative	3	3	4	6	6
Lobbyist	6	9	9	8	8
Consultant	5	10	8	5	6

** For percentages, see Appendix Table 9*

Table 6: Who Represents the Company? United States, Canada, Europe Combined (by Percent)

Company Executive or Consultant	*regulatory agency representation*	*federal government hearing*	*state government hearing*	*local government hearing*	*public meeting*
Top management	31%	37%	30%	19%	28%
Manager or director of corporate unit	45	36	42	40	48
Plant or facilities manager	28	14	33	59	59
General counsel	37	36	33	26	21
Environmental affairs officer	62	54	59	58	62
Public affairs officer	15	18	20	26	49
Government relations officer	21	30	28	20	20
Tax specialist	11	9	9	4	1
Financial officer	10	8	7	3	5
Trade association	41	45	37	15	14
Lobbyist	14	23	22	12	8
Consultant	35	24	28	26	28

Table 7: Who Represents the Company? United States (by Percent)

Company Executive or Consultant	*regulatory agency representation*	*federal government hearing*	*state government hearing*	*local government hearing*	*public meeting*
Top management	29%	39%	24%	15%	27%
Manager or director of corporate unit	49	40	45	42	52
Plant or facilities manager	31	18	40	65	65
General counsel	51	45	44	35	31
Environmental affairs officer	72	63	70	67	72
Public affairs officer	15	20	24	32	53
Government relations officer	26	41	39	27	26
Tax specialist	15	12	12	5	2
Financial officer	12	9	8	3	5
Trade association	53	58	45	17	16
Lobbyist	21	37	36	19	12
Consultant	48	33	36	31	33

Table 8: Who Represents the Company? Canada (by Percent)

Company Executive or Consultant	*regulatory agency representation*	*federal government hearing*	*state government hearing*	*local government hearing*	*public meeting*
Top management	41%	43%	48%	33%	39%
Manager or director of corporate unit	48	39	50	45	53
Plant or facilities manager	35	11	32	57	59
General counsel	27	35	28	20	12
Environmental affairs officer	55	46	48	48	55
Public affairs officer	20	15	18	21	47
Government relations officer	22	21	19	17	21
Tax specialist	7	8	5	4	0
Financial officer	11	11	10	4	6
Trade association	33	33	34	15	15
Lobbyist	6	6	5	2	4
Consultant	27	21	26	25	30

Table 9: Who Represents the Company?
Europe (by Percent)

Company Executive or Consultant	*regulatory agency representation*	*federal government hearing*	*state government hearing*	*local government hearing*	*public meeting*
Top management	24%	24%	18%	13%	18%
Manager or director of corporate unit	24	18	21	24	32
Plant or facilities manager	10	7	11	42	37
General counsel	8	8	8	8	7
Environmental affairs officer	42	36	39	47	40
Public affairs officer	10	13	13	13	39
Government relations officer	5	10	5	2	0
Tax specialist	3	2	3	2	0
Financial officer	2	0	0	0	2
Trade association	18	21	16	10	8
Lobbyist	5	5	3	2	2
Consultant	8	3	5	11	8

Table 10: Nature of Working Relationships with Outside Groups
United States, Canada, Europe Combined (by Percent)

Outside Group	*productive*	*adversarial*	*education*	*proactive*	*reactive*
National/federal regulatory agencies	57%	12%	20%	45%	43%
Regional/state regulatory agencies	69	11	18	57	28
Local regulatory agencies	60	4	22	62	29
Environmental activists	17	22	28	27	65
Local community groups	38	4	40	61	32
The media	30	7	35	35	53
Other companies in the same industry	71	3	22	21	12
Other industries in the same region	59	2	22	59	35

Table 11: Nature of Working Relationships with Outside Groups
United States (by Percent)

Outside Group	*productive*	*adversarial*	*education*	*proactive*	*reactive*
National/federal regulatory agencies	62%	20%	19%	40%	43%
Regional/state regulatory agencies	76	14	22	54	26
Local regulatory agencies	67	5	29	56	29
Environmental activists	18	29	33	21	66
Local community groups	44	4	48	60	29
The media	30	10	43	32	51
Other companies in the same industry	76	4	29	81	13
Other industries in the same region	66	2	30	63	29

Table 12: Nature of Working Relationships with Outside Groups Canada (by Percent)

Outside Group	*productive*	*adversarial*	*education*	*proactive*	*reactive*
National/federal regulatory agencies	52%	1%	21%	62%	36%
Regional/state regulatory agencies	65	7	14	68	30
Local regulatory agencies	47	1	15	71	29
Environmental activists	25	13	24	33	67
Local community groups	34	4	34	60	40
The media	34	6	25	31	64
Other companies in the same industry	67	1	16	88	13
Other industries in the same region	51	0	17	53	47

Table 13: Nature of Working Relationships with Outside Groups Europe (by Percent)

Outside Group	*productive*	*adversarial*	*education*	*proactive*	*reactive*
National/federal regulatory agencies	52%	3%	18%	31%	62%
Regional/state regulatory agencies	57	5	13	50	43
Local regulatory agencies	53	5	15	69	25
Environmental activists	5	15	21	42	58
Local community groups	26	3	26	68	32
The media	26	13	23	60	40
Other companies in the same industry	60	5	8	92	8
Other industries in the same region	52	5	6	56	38

Table 14: Company Involvement in Environmental Issues (by Percent)

Global Issues	*Aggregate*	*U.S.*	*Canada*	*Europe*
1. Erosion of the ozone layer by man-made chemicals	14%	13%	11%	25%
2. The greenhouse effect/global warming	15	18	13	10
3. Biotechnology and genetic engineering	7	6	6	13
4. Population growth and economic development	4	4	3	5
5. Population growth and the effect on biota and environment	1	1	1	0
6. Population growth relative to the effect of migration on agriculture, food and urban life	1	1	1	0
7. Loss of cropland and grazing land due to erosion, overgrazing, expansion of deserts, urbanization	1	1	2	0
8. Depletion of tropical rain forest, causing or contributing to timber loss, reduction in flora and fauna species diversity, watershed damage	1	1	0	2
9. Depletion of tropical rain forests, causing loss of carbon dioxide absorption capability and therefore contributing to global warming and climate change	2	4	0	2
10. Depletion of tropical rain forests for the purpose of using wood as fuel	1	1	0	2
11. Misallocation, pollution, overuse of fresh water supplies	13	14	13	12
12. Habitat loss in the marine environment; fisheries	6	5	12	2
13. Acid rain - the effects of air pollutants on fisheries, forests, crops	25	28	22	18
National, Regional, State and/or Local Issues				
14. Risk assessment and management regarding the communication of risk to the public	37%	39%	34%	33%
15. The effort to arrive at reasonable risk assessment via consensus of the concerned parties; dispute resolution	30	29	31	33
16. Clean water—threats from surface water contamination from farms and livestock operations	21	24	16	18
17. Clean water—threats from surface water contamination from urban and industrial run-off	43	47	40	35
18. Clean water—threats from ground water supplies threatened by pesticide use, leaking from waste dumps and leaking underground storage tanks	44	50	38	34
19. Management of water resources: quantity, quality, price	23	26	19	18
20. Clean air: toxic air pollution emitted from stationary sources	56	63	46	46
21. Clean air: toxic air pollution emitted from vehicular sources	13	14	82	4
22. Nuclear power production: planning long-term development	8	10	2	9
23. Nuclear power production: planning progressive phase-out	4	5	0	3
24. Concerned with reprocessing and the recycling of unused nuclear fuel	5	6	3	3
25. Concerned with nuclear waste disposal	9	12	3	5
26. Involved in the nuclear vs. fossil fuel debate	8	8	6	10
27. Hazardous and toxic chemical waste disposal	53	57	53	42
28. Toxic solid waste disposal—the problems associated with regulating hazardous materials and the cleanup of abandoned hazardous waste sites	51	57	46	38
29. Nontoxic waste disposal: concerned with the exploding volume of materials; problems with recycling, changes in packaging	41	43	41	35
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The Conference Board

Report Number 962

Linking Work-Family Issues to the Bottom Line

This comprehensive research review answers these questions:

- *What is the impact of work-family problems on absenteeism, turnover, and employee stress?*
- *Who bears the brunt of work-family conflict—work or family? men or women?*
- *What are the productivity effects of on-site child care, maternity leave, flextime, and employee assistance programs?*

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Linking Work-Family Issues to the Bottom Line

by Dana E. Friedman

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From the President

There are a growing number of U.S. corporations responding to the family needs of their workers. But before a company implements its work-family agenda, it often must justify the appropriateness of business attention to family issues and demonstrate a return on investment from new policies or programs.

For some, substantiating the bottom-line effects of family issues has been arduous. Until recently, little research in this area has been done. Few companies surveyed their employees to find out about their family problems, and even fewer evaluated the programs that had been implemented. Designing a reasonable study may be complex and costly. What research exists may be unpublished, or hidden in obscure social science journals and written in non-business language.

Early on, The Conference Board recognized the important role that work and family issues would have on the human resources agenda for the 1990s. In 1983, the Board created its Work and Family Center and organized a Work and Family Research Council to support research in this area. In 1988, with the support of AT&T Communications, Exxon Corporation, the Du Pont Company and IBM Corporation, the Board convened a group of business leaders and researchers from a variety of disciplines to review what existing research concluded, and what research still needed to be done.

This report presents the research summaries of the 1988 symposium and the findings from more than 80 other studies conducted in the past few years. It gathers in one place most of the information that a company would need to determine the appropriateness of creating a work-family agenda. It is intended as an introduction to research for the business leader and an introduction to business for the researchers who hope to shed further light on this subject in the years ahead.

PRESTON TOWNLEY
President and CEO

About the Author

Dana E. Friedman is co-president of the New York-based Families and Work Institute. She is a leading researcher, consultant and author on the subject of child care and corporate work and family programs. In 1983 she was a founder of The Conference Board's Work and Family Information Center and is the author of two other Conference Board studies: ***Corporate Financial Assistance for Child Care*** **and** ***Family-Supportive Policies: The Corporate Decision-Making Process.***

Method

This report reflects the most comprehensive review of research that tries to link family issues to bottom-line business concerns. It includes findings from more than 40 studies at individual companies and an additional 40 studies on employees across a variety of work locations.

The framework for this report is derived from the information presented at a Conference Board Symposium on Workplace Research on the Family, held March 23-25, 1988, at The Arden House in Harriman, New York. Several experts were asked to review the literature and a panel of representatives from progressive companies were asked to respond. The purpose of the symposium was to bring together researchers and corporate executives who had been involved in recent studies exploring the work-family nexus. The meeting focused on the research process and research findings in an effort to build upon and improve the growing knowledge base on work-family issues.

Participants were asked to consider the following four questions as they reviewed the findings from their research:

1) What aspects of jobs are most predictive of work-family conflicts for employees and their families?

2) What aspects of family life are most predictive of work-family conflicts?

3) What are the different dynamics of work-family conflicts as they relate to gender and family status?

4) What are the different dynamics of work-family conflicts as they relate to age and occupational status?

Ellen Galinsky of the Families and Work Institute, Arthur Emlen, then of Portland State University, Fran Rodgers of Work/Family Directions, Inc., and Mary Beth Shinn of New York University, summarized the findings from all of the submitted research on the nature of work-family conflict. The effects of workplace programs were discussed by researchers who conducted literature searches on dependent care, alternative work schedules and counseling. Presenters included Dana Friedman, then of The Conference Board, Kathleen Christensen of City University of New York, and Sheila H. Akabas of Columbia University's Center for Social Policy and Practice in the Workplace.

Researchers and corporate executives who participated in the Arden House panel examining the research process included Bradley Googins and Diane Burden from the Boston University School of Social Work; Bruce Davidson, employee assistance manager for Digital Equipment Corporation; Karen Geiger, vice president, NCNB Corporation; Steve Wexler, manager of employee communications and research at Merck & Co.; Ben Wilkinson, director of human resources, Faith Wohl, director of workforce partnering from the Du Pont Company; Norman Costa, director of research for IBM; and John Fernandez representing AT&T Company and several other corporations where he conducted research as a consultant.

Subsequent to the symposium, additional researchers and companies were contacted to learn more about the outcome of their research efforts. Each contact lead to another company or study. Attendance at conferences, a thorough literature search and a review of bibliographies from published research reports were also used to find studies that might lend insight into the connection between family problems and company solutions on the bottom line.

During this time, the author got feedback and insight from The Conference Board's Work and Family Research Council. They helped to identify new research and interpret some of the findings presented in newly released studies. Other experts at the Families and Work Institute and Work/Family Directions, Inc. contributed to the dialogue about the conclusions that could be drawn from the findings.

There were no criteria for eliminating studies from this review. While the findings from poorly conducted research are not presented, their methodologies are discussed so as to help companies and researchers avoid some of the common pitfalls in conducting research of this nature. The presentation of findings does not always mention whether tests of significance were applied to the data since many companies seem satisfied with the knowledge that modest improvements in work performance ultimately yield a financial gain or the prevention of a financial drain.

The Conference Board is grateful to AT&T Communications, Exxon Corporation, the Du Pont Company and IBM Corporation for their support of the symposium and this report of the findings.

Executive Summary

There is evidence to suggest that work-family programs can improve a company's bottom line. Today's labor market developments and lagging productivity create the economic necessity that may result in corporate efforts to accommodate the family. It may be a labor shortage or a labor mismatch; it may even be layoffs that create the need to boost morale among those who stay. Whatever the reason, companies are evaluating their recruitment efforts, benefit plans, work schedules and productivity incentives—all designed for the more homogenous, male-breadwinning work force of the past.

What role does research play in demonstrating this bottom-line impact and motivating companies to respond to family needs? The conclusion of this report is that some research is necessary, but in most cases it is not sufficient by itself to justify an investment. Somewhere in the process of designing and implementing family-supportive policies, research will be needed to create a buy-in from key players within the organization. However, research can make the case to those who want to see the connection between the bottom line and family concerns, but it will be unconvincing to those who do not believe in this new role for business. In either case, the CEO or someone in top management must be an advocate for a more "family-friendly" workplace before change will occur. The role of research in decision making and program design is likely to increase as the body of relevant research grows. In generating work-family programs, research goes hand in hand with a commitment to the needs of a changing work force.

Thousands of companies have responded to the family needs of workers despite the limited body of research available. Some of the research examines the effects of family problems, or how much the company may be losing by not responding to the family needs of employees. Other research helps define the effects of family programs, that is, how much the company may gain by addressing employees' family needs. To date, far more research has examined how productivity is negatively affected by unmet family problems than on how it is positively affected by company efforts to solve the problem.

Part of the reason for this imbalance is that few companies have evaluated their new family-supportive initiatives. Virtually no studies compare different work-family initiatives and their effects on work behavior. Most current research provides information for employers on whether or not to take action at all, rather than on helping them select or implement effective policies and programs.

What seems clear from national trends as well as research is that recruitment and retention efforts can fall short as the result of family problems. Productivity can suffer and absenteeism and tardiness can increase when employees experience conflicts between their work and family responsibilities. The family may bear the greatest brunt of the imbalance, but work attendance and performance is affected as well.

Stress is on the rise, and much of it can be attributed to the increased burdens on single parents and two-earner couples who have jobs at home and at work. The research indicates that the stress produced by work-family conflict is due to daily hassles, and not necessarily catastrophes.

Pregnancy involves some periods of fatigue or sickness and absences due to delivery and convalescence. About 85 percent of new mothers return to work after their leaves, many of whom have difficulties finding reliable, affordable *child care*. The inadequacies of the child care market cause working parents to miss work or feel stressed about their children in someone else's care.

As with child care, *elder care* problems are largely the result of inadequacies in the social services available in the community. The complexity and duration of elder caregiving often increases stress levels, absenteeism and quit rates beyond those caused by child care.

Are there programs that will prevent these negative repercussions from occurring? With very few evaluations of company programs, a body of small, but consistent research suggests that child care centers, parental leave policies, flextime and employee assistance programs offer some payback to the company.

The research on the *employer-supported child care center* suggests that reduced turnover may be its most positive benefit. According to one national study, companies with a progressive *maternity leave policy* had working mothers who were more satisfied with their jobs, took fewer sick days, and were less likely to quit. *Flextime*, with a fair amount of flexibility, can reduce tardiness and absenteeism and improve morale. And research on *employee assistance plans* indicates the potential for a reduction in stress and health care costs.

Companies may not want to conduct research on work-family issues because of its cost and complexity. Resistance to research on employees' family problems may reflect a concern about employee reactions to issues of privacy, the sensitive nature of the questions that are posed, or to the expectation that the company should do more. A decision to proceed is made only when it is clear that the company is prepared to respond to the findings. The hesitancy to conduct evaluations of family-supportive policies and programs stems from the need for a costly, sophisticated research design that calls for pretests and post-tests over a long period of time.

Existing research offers a benchmark for assessing the findings from future studies. By comparing findings from different time periods, it is possible to see the evolution of employee expectations regarding employer attention to family concerns. Employees may have underestimated their work-family problems in early studies because workers were concerned about admitting, even anonymously, that they were absent for family reasons. Such admissions were thought to be risky in unsupportive climates.

As work environments change and employers become more savvy about work-family issues, employees, now safe in speaking up, may begin to exaggerate their problems in order to ensure a management response. Changes in employee expectations over time may yield a clearer picture of the problem, but not of the solution. As this report will show, more evaluations of work-family programs can help strengthen the effectiveness of company responses. If companies really want to know the costs and benefits of their family-supportive programs, they may not only need to become more family-friendly, but more research-friendly as well.

Introduction

Do corporate investments in the family needs of employees yield a return? Or are they nice things to do for employees that offer no financial payback?

There is evidence to suggest that work-family programs can improve a company's bottom line. Today's labor market developments and lagging productivity create the economic necessity that may result in a corporation's making workplace changes to accommodate the family. *Workforce 2000*, the report from the Hudson Institute commissioned by the U.S. Department of Labor, has had enormous impact on our understanding of the shifting size and composition of the available labor pool.[1] Whether it be labor shortages or a labor mismatch, companies are evaluating their recruitment efforts, benefit plans, work schedules and productivity incentives—all designed for the more homogenous, male-breadwinning work force of the past.

Obsolete workplace practices may account for increasing relocation refusals, apparent gender inequities, and unsuccessful minority hiring and career development. A study of family concerns may reveal these human resources problems, or family concerns may emerge as a business issue after an investigation of relocation problems or affirmative action complaints. In either situation, the need to address family concerns has been established and appropriate changes may follow.

While the impetus for a company response to family needs is primarily economic, what ultimately motivates a company to change? Amory Houghton, former chairman of the board of Corning Inc. and currently a New York Congressman, remarked at a 1981 work and family conference: "One percent of all companies want to be first and 99 percent want to be second." Today, at least 10 percent of large corporations provide some dependent care programs, and a growing number of small- and medium-sized companies are beginning to follow suit. Competitive momentum in the field has created some of the motivation for companies to respond as competitors—whether within an industry or within a community where they must draw from the same labor pool. The media attention that often follows a company initiative provides an additional incentive.

Some companies may feel pressures from unions that put family issues on the bargaining table. Others may react to threats of government-mandated benefits, such as the current debate about family and parental leave. With several federal bills pending and 13 states with mandated leaves, many employers have revised their leave policies so as to appear proactive, rather than reactive, in the face of government demands.

What role does research play in motivating companies to respond to family needs? The conclusion of this report is that some research is necessary, but not sufficient to justify an investment. Somewhere in the process of designing and implementing family-supportive policies, research will be needed to create a buy-in from key players within the organization. Accountants or shareholders may require more substantiated evidence that a family problem is causing a productivity loss or that a family-supportive response will create a productivity gain. But the CEO or someone in top management must be an advocate for a more "family-friendly" workplace before change will occur.

Research can make the case to those who want to see the connection between the bottom line and family concerns, but it will be unconvincing to those who do not believe in this new role for business. If a company believes that personal problems should be kept at home, management will be resistant to any data suggesting that employees bring their problems with them to the workplace, or that the company has a responsibility to help solve those problems as a matter of self-interest. In other words, seeing is not believing when assessing the capability of research to influence corporate behavior.

Thousands of companies have responded to the family needs of workers despite the limited body of research available. There are, however, several methods to assess the effects of family issues on the bottom line.

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[1] William B. Johnston and Arnold H. Packer, *Workforce 2000: Work and Workers for the 21st Century*, Hudson Institute, Indianapolis, Indiana, 1987.

(1) ***Individual company needs assessments*:** A company considering policy changes or new programs may first want to develop a demographic profile of the employees, with feedback on how unmet family needs negatively affect work performance. Such surveys may ask employees how often they have been absent from work due to a child care problem, how frequently they have lost concentration on the job due to worries about elder care, or how many times they refused relocation or promotion opportunities due to family conflicts.

(2) ***Studies of employees across companies*:** Surveys of employees working for a number of different firms, either on a national scope or within a particular community, can provide indications of family concerns that cause problems at work.

(3) ***Evaluations of individual company responses*:** A study can be conducted to determine the effects that a family-supportive policy or program has on employee work patterns and performance in an effort to improve the program or justify its continuance.

(4) ***Studies of managers across companies*:** Researchers can obtain feedback from managers regarding the potential for a family supportive program to yield a return on investment. Some studies include surveys of all employers in a particular state or community, whether or not they have any family programs in place. Others survey managers working in companies with family-supportive programs in order to assess their perceptions of the effects of those programs.

The first two types of research—employee surveys in one company or across companies—help define the effects of family *problems*, or how much the company may be losing by not responding to the family needs of employees. The second two types of research—evaluations of specific programs or surveys of managers' perceptions—help define the effects of family *programs*, that is, how much the company may gain by addressing employees' family needs.

This report divides the research according to these two types of outcomes. More than 80 research studies are incorporated into the analysis. To date, far more research has examined how productivity is negatively affected by unmet family problems than how it is positively affected by company efforts to solve the problem. For instance, studies show how often parents are absent due to sick children or the frequencies of work interruptions due to elder care responsibilities. But far less information exists on whether a sick child care center or an elder care referral service would mitigate the negative effects of these problems. In essence, much more is known about what companies *lose* by not responding than about what they might *save* if they did respond.

Part of the reason for this imbalance is that few companies have evaluated their new family-supportive initiatives. Such research is often complex and expensive; it requires pre- and post-testing and studies of comparison groups over a long period of time. It is also difficult to attribute cause-and-effect relationships to an initiative since companies often implement several policies at once. No one can be sure that changes are the result of a child care program or a flextime schedule when both were implemented within weeks of each other.

As the number of companies with family initiatives expands and the legitimacy of an investment is more widely perceived, companies become more interested in learning which options will yield the greatest return. At present, virtually no studies compare different work-family initiatives and their effects on work behavior. Most research provides information for employers on whether or not to take action at all, rather than helping them select or implement effective policies and programs.

Interest in evaluations may increase as companies with family initiatives try to learn more about the effectiveness of these programs. For instance, while child care studies typically examine employer-sponsored child care centers, the positive findings have often been used to substantiate an investment in other types of child care support. However, while evidence suggests that a child care center can improve morale, loyalty and productivity, and reduce absenteeism, turnover and tardiness, little is known about the magnitude of the effects or whether they apply to any other types of child care programs.

Scope of This Analysis

This report contains the most comprehensive analysis to date of research that attempts to link productivity and other work behaviors to work-family problems and programs. In most cases, references to these research studies are abbreviated in the text of this report. A full citation for each study can be found in the report.

Part 1 (pages 11-35) looks at the nature and manifestations of work-family problems, such as stress, pregnancy, child care and elder care. *Part 2* (pages 37-59) reviews effects of company responses to these problems, including parental leave policies, employee assistance programs, flextime arrangements, and on-site child care centers. The consequences of each are described in terms of company issues: recruitment, retention, absenteeism, tardiness and productivity.

While the research findings show the potential for a return on investment in family-supportive policies, these claims must be put in context. Common sense does not accept, nor does research show, that companies can solve all management problems with work-family initiatives. Dull and unpleasant jobs cannot be improved by the presence of a child care center at the worksite. Other work conditions and the company culture may have an overriding impact on work behavior and productivity. Determining what workplace environments help foster effective programmatic or policy responses to family needs is the next frontier for research in the work-family arena.

Part One: Work–Family Problems: How They Affect the Bottom Line

Where Work and Family Meet

Companies considering work-family responses want proof that they will save money. Evaluations of such programs, however, are scarce. Firms appear far more likely to conduct needs assessments that demonstrate the level and nature of unmet family problems. As Allen Bergerson, director of personnel policy development at Eastman Kodak, notes: "In 1987, when our work-family task force proposed implementation of our family-supportive policies, management asked what rate of return could be expected on the investment. I responded that the savings or return could not be substantiated, but that the problems we were attempting to solve were costing more than the proposed investment, and that we were more than confident that the return would exceed the costs of the programs. Nothing has occurred since to shake that confidence."

This section of the report examines how work-family problems affect the company in terms of recruitment, productivity, absenteeism, and turnover. It also explains the sources of work-family conflict and the specific impacts of work-family problems such as stress, pregnancy, child care and elder care.

Recruitment

Companies are competing for a shrinking number of workers, many of whom are female, foreign or elderly. The needs of these workers will have an impact on whether or not they enter the labor force and for whom they will work.

The majority of women currently available for work are in their childbearing years, and most will have children during their work careers. A survey conducted by the Bureau of the Census in 1982, however, found that 26 percent of women who were not employed would work if affordable child care were available; another 13 percent of mothers working part time said they would work more hours if they could find child care.[2]

Child care issues may hamper recruitment at senior levels. Only an estimated 30 percent of women in senior positions have children, compared to 95 percent of men in similar positions.[3] If the majority of women with children are excluded from consideration, companies cannot draw from a complete pool of talent for the highest levels of management. Felice Schwartz, president of Catalyst, an organization committed to women in management, observed at a 1988 Conference Board conference on women in the corporation: "Companies that are determined to recruit the same number of men as they used to for leadership will have to dig much deeper into the male pool....Even employers reluctant to hire women into upper management positions ranks will recognize that it is better to have high-performing women than moderately performing men."

Another recruiting problem involves minority groups, who will double their representation in the labor pool between now and the turn of the century. Although labor shortages normally produce openings for minority workers, *Workforce 2000* raised the issue of the concentration of minorities—a high proportion of whom are single mothers—in economically declining cities where job opportunities are not abundant. Scant research exists on the needs and expectations of minority workers, especially those in low-income families. Similarly, the family cultures of new immigrant populations and their workplace problems and needs are unknown.

Productivity

"Productivity" is a popular word that has come to mean more than the classic economic definition of "output over input." The limited research available on the subject suggests that family problems may cause worry at work, resulting in a loss of concentration and the inability of the employee to perform up to par.

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[2] U.S. Bureau of the Census, Current Population Reports Series, p. 23, No. 129, *Child Care Arrangements of Working Mothers*, June 1982, Washington, DC, U.S. Government Printing Office, 1983.

[3] *The Corporate Woman Officer*, Chicago, IL: Heidrick and Struggles, Inc., 1986; Korn/Ferry International's *Executive Profile: Corporate Leaders in the Eighties*, New York: Korn/FerryInternational, 1986.

Table 1: Relating Child Care to Productivity

Employees reporting that child care responsibililities affect productivity some, significantly, or a great deal.

	All Employees	*Men*	*Women*
Company A (high technology)	48%		
Company B (pharmaceutical)	43	38%	51%
Company C (law firm)	41	35	45
Company D (apparel manufacturer)	33		
Company E (home care products manufacturer)		48	59
Company F (pharmaceutical)		36	62
Company G (pharmaceutical)		29	49
Company H (financial services)		35	46

All studies conducted between 1985 and 1990.

One reason research is limited is that the human factors contributing to productivity are rarely assessed. Labor is generally seen as a cost of production, rather than as a critical factor in the productive outcome. Jerome Rosow of the Work in America Institute contends that this perspective fosters a negative attitude that may contribute to the prevailing distrust between management and employees. As a result, costs of benefits and other employee programs are not recognized for their return on investment.

Productivity studies show that the human factor contributes between 10 and 25 percent to productivity growth. Workers account for 50 percent or more of controllable costs; in labor-intensive services and government agencies, they account for 70 to 80 percent of all costs. Rosow warns: "Managers who ignore the human side of the enterprise do so at their own peril."[4]

Studies show that family concerns are often reported to reduce productivity and effectiveness at work. In eight company surveys, about half of the women and more than a third of the men contend that child care responsibilities affect work to some degree (Table 1). A study of 33 companies in Oregon, conducted by Arthur Emlen, found that a third of employees with adult dependents work less effectively due to worry about their elders. Thirty-eight percent of women caregivers and 22 percent of male caregivers report these effects. A survey of the Adolph Coors Company found more than one-third (36 percent) of employees reported a decline in productivity due to the child care problems of *co-workers.*

Turnover

High employee turnover is frequently considered an important cause of lagging productivity rates in the United States. Companies are also concerned with investments in training, the disruption and cost of replacement, and the scarcity of superior talent in the marketplace. Since companies will be competing for workers in what may well be a job seeker's market, the decision to stay with a particular employer may be influenced by the extent to which a company addresses family issues.

J. Douglas Phillips, a vice president at Merck & Co., Inc., which conducted an internal study on the costs of turnover, found that losing one exempt employee costs the company about 1.5 times the individual's annual salary. Non-exempt turnover costs are estimated to be about .75 times the annual salary of a given position.[5] In addition, the average adjustment period for a new employee is estimated to be more than a year (12.5 months). Although companies typically measure the visible components of turnover such as processing and relocation costs, Phillips asserts that less than half the costs of turnover are visible. The hidden costs, according to Phillips, include incoming employee inefficiency, inefficiency of co-workers, and inefficiency of the vacant position awaiting appointment.

Turnover costs become increasingly important as traditional retention strategies are eroded by diminished loyalty and job commitment. Employees are likely to stay with firms that offer good jobs, pay, working conditions, and benefits. It is generally held that lack of job satisfaction leads to voluntary employee turnover. However, data indicate that employee commitment affects turnover far more than job satisfaction. The employee may be dissatisfied with the job but still view the organization positively as a whole.

Among full-time workers, the Census Bureau reports that women are more likely than men to have had one or more work interruptions lasting six months or longer.[6] In 1984, 42 percent of full-time working women (compared to 12.1 percent of men) said they had at some time in their careers interrupted their work for a period of 6 months or longer. "Family reasons" were given as the cause of the break by more than a third of these women. According to the 1990 National Child Care Survey, about 25 percent of mothers left their previous jobs for family reasons. Child care problems caused 5 percent of mothers to leave their last job.[7]

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[4] Jerome M. Rosow (ed.), *Productivity: Prospects for Growth*, New York: D. Van Nostrand and Company, 1981, p. 128.

[5] J. Douglas Phillips, "Employee Turnover and the Bottom Line," Working Paper, 1989, p. 3.

[6] U.S. Bureau of the Census, "Male-Female Differences in Work Experience, Occupation and Earnings: 1984," Household Economic Studies Series, p. 70, no. 10, August 1987, p. 14, in Deborah Walker, *Mandatory Family Leave Legislation: The Hidden Costs*, Cato Institute, Policy Analysis No. 108, June 1988.

Employee turnover may be related to the birth or adoption of a child, or substantial care required for an aging relative. Studies report:

- An estimated 16 percent of new mothers do not return to their jobs after maternity leave.[8]
- An estimated 12 percent of employees quit their jobs due to significant elder care responsibilities.[9]
- Between 1985 and 1988, the proportion of women who considered terminating employment because of parental responsibilities increased by 50 percent. There was also a 50 percent increase in the number of parents who considered quitting work for an employer with more flexibility. The percent of men who considered quitting more than doubled during this two-year period.[10]

Absenteeism

Companies expect a certain amount of absenteeism and recognize that some absence is beneficial to the employee. Some research suggests that rigid efforts to ensure perfect attendance may lead to unintended and negative consequences, such as reduced product quality and increased accidents.[11] All medium- and large-sized companies offer paid time off that includes sick leave, personal days, vacation, or disability time, thus designating legitimate reasons for absence. According to a 1989 Conference Board study, absence for family reasons is allowed in about two-thirds of corporations.[12]

Showing up for work depends on one's ability and motivation to be present. These factors are affected by the availability of support from the family, the community, and the company. Research data suggest that job satisfaction and loyalty are related to absence, and that employer-provided family supports may increase job satisfaction. While the company may blame the family for the absence, the employer's lack of accommodation may be the underlying reason.

The average worker loses between seven and nine days a year; about half of absences may be due to family problems, according to a survey for *Fortune* magazine.[13] Family-related absences are influenced by the following factors:

- the presence, number and age of children
- marital status
- the sex of the employed parent
- form of child care used
- occupational level
- family income
- company policies.

According to Arthur Emlen of Portland State University, who has examined the family reasons for absence:

> "If the workforce misses about nine days per year, men who have no children miss 7.5 days. Add a half a day for being a father, one day for using out-of-home care or 5.5 days if the children look after themselves. This brings the total for men to 13.5 days. Women without children start at 9.5 days absent. Two days can be added if kids are in care outside the home or 3.5 days if they look after themselves. Add another three days if she is a single parent. If she is in management, she will miss a day or two less, but she will be late to work more often since her job will allow it. Having a family income of $30,000 or more saves women in management and professional positions nearly two days or a half day for women who are not in that position. The income difference saves men one day at either occupational level. Take off several days if the company's personnel policies severely clamp down on absenteeism, but add stress."[14]

Since family responsibilities change over the course of one's life, related absences will fluctuate for each employee. In an analysis of 23 data sets from 18 studies of absence, gender was found to explain less than 1 percent of the sum of all causes of work absences. (Job satisfaction explained 4 percent; true illness explained 33 percent.)[15]

Absence rates for men and women move in different directions over the course of their working years. For women, absence rates increase in their childbearing years (18-44), while for men, the rate falls. An article in the *Monthly Labor Review* concludes: "Marital responsibilities seem to induce men toward a firmer commitment to their jobs, so that they spend less time away from work. For most women, the proportion of time lost increases with the presence of young children."[16]

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[7] Sandra Hofferth, April Bayfield, Sharon Deich and Pamela Holcomb, *National Child Care Survey 1990*. Sponsored by NAEYC, ACYF, and Department of Health and Human Services. The Urban Institute, Washington, D.C.: 1991.

[8] James T. Bond, *Accommodating Pregnancy in the Workplace*. New York: National Council of Jewish Women, 1987.

[9] *A National Survey of Caregivers/Final Report*, by Opinion Research Corporation for the American Association of Retired Persons and The Travelers Foundation, Washington, D.C.: November, 1988.

[10] Company surveys conducted by Rodgers and Associates, 1985, 1988, Boston, Massachusetts.

[11] Richard M. Steers and Susan R. Rhodes, "Major Influences on Employee Attendance: A Process Model," *Journal of Applied Psychology*, 1978, Vol. 63, No. 4., pp. 391-407.

[12] Kathleen Christensen, *Flexible Staffing and Scheduling*, New York: The Conference Board, 1989, Research Bulletin 240.

[13] Ellen Galinsky and Diane Hughes, "The *Fortune* Magazine Child Care Study," New York: Bank Street College of Education, Unpublished paper, 1987.

[14] *Employee Profiles: 1987 Dependent Care Survey, Selected Companies*, Oregon: Regional Research Institute for Human Services, Portland State University, 1987. Arthur Emlen and Paul Koren, *Hard to Find and Difficult to Manage: The Effects of Child Care on the Workplace*, Oregon: Regional Research Institute for Human Services, Portland State University, 1984.

[15] Robert Haccoun, "Another Myth Goes 'Poof'," *Canadian Banker*, Vol. 95, No. 3, May-June, 1988, pp. 54-56.

The 1989 Current Population Survey reports that 11.5 percent of married women who had children under the age of six had absences.[17] But absenteeism due to illness or injury among married women with young children was only somewhat higher than for single women without children. It is the "miscellaneous excuse," probably due in large part to family concerns, that jumps to 7.5 percent for married women with at least one preschooler (compared to 2.2 percent for single, childless women). The miscellaneous category of absences for married men with children decreases as the number of children increases, quite possibly because their wives are less likely to be working.

The studies repeatedly confirm that absenteeism is related less to gender than to the worker's economic status and role in the family. For instance, Emlen found that in two-earner families, women missed 50 percent more days per year than men because they carry more of the daily responsibility for child care. Since women on average tend to earn less than men, having the woman stay home to cope with family emergencies is a rational economic decision.

Men rarely miss work due to child care. However, when they do, their absence is strongly associated with poor health and stress. This same association is not found among women.[18]

Emlen also found that companies with low rates of absenteeism have high percentages of employees who report stress related to child care. He speculates that the ability to take time off when needed can function as a safety valve.

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[16] Bruce W. Klein, "Missed Work and Lost Hours, May, 1985," *Monthly Labor Review*, November, 1986, p. 28.

[17] Op cit, p. 29.

[18] Marybeth Shinn, Blanca Ortiz-Torrez, Anne Morris, Patricia Simko, Nora W. Wong, "Child Care Patterns, Stress and Job Behaviors Among Working Parents," New York: Unpublished paper by researchers at New York University, 1987.

The Nature and Sources of Work-Family Conflict

Researchers have begun to define a concept they call "work-family conflict," as a measure of employee functioning. The presence of conflict suggests that the employee will work less efficiently in some way. There are both job and family sources and consequences of conflict (see box, page 16).

The larger concept, "work-family fit," is less understood. Researchers acknowledge that little is known about employees who have learned to manage the work-family balancing act and have developed strategies to avoid conflict. The focus on negative consequences may also overlook the ways in which work enhances family well-being, or how families positively affect work. The findings, instead, are used to demonstrate the costs of not responding to family problems.

The Nature of Conflict

The relationship between family and work is reciprocal. Both are changing and as they do, the relationship between the two creates even more change.

The change in work-family relationships will occur over the course of one's work career. Different problems will occur at different stages of life and at different levels of job responsibility.[19] For instance, for some people, work and family may remain independent of each other. For others, work "spills over" into family life; or happiness or discontent at home affect feelings at work. Still others use one sphere to compensate for what is missing in the other. The most common experience, however, is one of conflict. Of eight companies studied, five companies had about 50 percent of their employees reporting some work-family conflict. Exempt employees report a slightly higher amount of conflict than the non-exempt. Women report more conflict than men, and parents more conflict than non-parents (see Table 2).

Conflict occurs when the demands of one sphere make it hard to comply with the demands of the other. In the 1980 General Mills survey, 64 percent of respondents in the general population agreed that "people who expect to get ahead in their careers or jobs have to expect to spend less time with their families." The percentage was even higher among human resources officers.[20]

Whatever the nature of the relationship, the research clearly shows that the family is more likely to bear the

Table 2: The Extent of Work-Family Conflict

	All Employees
Company A (personal/home care products manufacturer)	53
Company B (law firm)	53
Company C (financial services)	50
Company D (apparel manufacturer)	45
Company E (22 hospitals)	43
Company F (pharmaceutical)	37
Company G (insurance)	37*
Company H (33 companies in Oregon)	23

*Among parents of children under six.
Note: All studies conducted between 1985 and 1990.

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[19] Paul Evans and Fernando Bartolome, "The Dynamics of Work-Family Relationship in Managerial Lives," London: *International Review of Applied Psychology*, Sage, Vol. 35, 1986, pp. 371-395.

[20] *Families and Work: Strengths and Strains*, Minneapolis: General Mills, 1980.

Sources of Work-Family Conflict

Jobs contribute to work-family conflict when the employee:

- works long hours;
- has a burdensome work schedule involving overtime, weekend work, travel demands, or shift work;
- has little control over the hours worked;
- has a job with little autonomy;
- is very absorbed in the job;
- has no job security;
- has changed jobs due to promotion, layoff or relocation;
- has a very physically or mentally demanding job;
- has a negative social climate at work;
- has unsupportive co-workers;
- has an insensitive supervisor;
- is in a company with inflexible work policies.

Families contribute to work-family conflict when the employee:

- has a disapproving spouse;
- has inequities in the marriage;
- has an unequal division of home labor;
- has children, especially preschoolers;
- has had unstable child care arrangements;
- has elder care responsibilities, especially for relatives living at a distance.

Source: General conclusions drawn from more than 80 studies of various work and family issues.

greater burden of work-family conflict. Evans and Bartolome found that nearly half of the male managers and a third of their wives described the work-family relationship as one of spillover, specifically negative spillover. In all cases, this spillover was in one direction: the emotions of work carried over into private life, and rarely vice versa. The researchers found that 45 percent of 532 managers studied were dissatisfied with this allocation of time and energy between their professional and private lives, and resented the disproportionate amount being spent at work.[21] In Emlen's research, 59 percent of employees rated family performance good or unusually good, while 86 percent gave a good rating to job performance. Emlen concludes: "The balance is not even and the job takes priority" (see Table 3).

It may be easier for some people to block out family problems at work than to ignore work pressures at home. Research suggests that men seem to pay more attention to areas of their lives where goals are clearly defined. As one employee said in a study, "I know exactly what to do to become the CEO. But who sets goals for the family and children?"[22] DeLong reports that many successful men are highly competent at directing and managing people in the workplace but find themselves inept at managing their personal lives.[23]

The need to keep work and family life separate was based on the belief that different emotional states are required in each sphere of life. Rosabeth Moss Kanter's "myth of separate worlds" is based on the presumption that the world of work functions on objective criteria while home life is exclusively value-laden and emotion-driven. The very standards of work and home life are presumed to be in conflict.[24]

Perhaps the principal form of work-family conflict concerns the overall amount of time that the individual spends tending to both work and family responsibilities, obviously a function of how much is spent in each role. The amount of time parents spend on work, household chores and child care amounts to almost two full-time jobs. Burden and Googins found that married mothers spend about 85 hours per week on these responsibilities, while married fathers spend 66 hours per week on home, work and children. Single mothers spend about 75 hours per week on these tasks[25] (see Chart 1).

Table 3: What Suffers Most: Work or Family?

Percent of employees reporting some interference between work and family responsibilities.

Study Assessing Locus of Work-Family Conflict	*Work Interferes With Family*		*Family Interferes With Work*	
	Men	*Women*	*Men*	*Women*
Fortune (1987)	32%	41%	16%	18%
Fernandez (1986)	22	43	13	39
Merck & Co. (1986)	37	41	18	21
Large chemical company (1986)	35	56		

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[21] Fernando Bartolome and Paul A. Lee Evans, "Professional Lives Versus Private Lives—Shifting Patterns of Managerial Commitment," *Organizational Dynamics*, Spring, 1979, p. 375.

[22] Gary Brice, "Work and Elder Care: The Dual Role of Employee Caregivers," Buffalo, New York: University at Buffalo, Center for the Study of Aging, 1987.

[23] Thomas J. DeLong and Camille Collett, "Managers as Fathers: Hope of the Homefront," Brigham Young University, 1987, Unpublished paper.

[24] Rosabeth M. Kanter, *Work and Family In the United States: A Critical Review and Agenda for Research and Policy*, New York: Russell Sage Foundation, 1977.

[25] Diane S. Burden and Bradley K. Googins, "Boston University's Balancing Job and Homelife Study," Boston, Massachusetts: Boston University School of Social Work, 1987.

Different factors affect the work-family relationship depending upon an employee's circumstances at work and at home. There are three conditions which seem to have a major influence on either moderating or aggravating work-family conflict. They include the worker's personality; the perceived importance of each role; and the sanctions or negative repercussions that would result if the role is not performed satisfactorily.

Personality. According to one study, people with Type A personalities may work longer hours and demand more of themselves, thus increasing the potential for conflict. Burke and Weir found that Type A personalities—typically competitive, aggressive, and driven—are at greater risk of bringing work stress home.[26] Evans and Bartolome found that it is not just the personality characteristics alone that matter, but the "person-environment" fit. If the person's skills and needs are not well matched to the job, the misfit could create stress that then affects the work-family dynamic. At its most dramatic level, these researchers identified the "prisoner-of-success syndrome," where work fits the personality so closely that professional activity is more stimulating than any other.

Role Importance. Several studies found that when work is very satisfying and important, individuals spend more time there and use their families as a "battery charger." In this case, work does not invade private life—it excludes it. Another researcher identified the "success spiral syndrome" where success at work reinforces work investment that leads to more success, thus creating more work involvement.

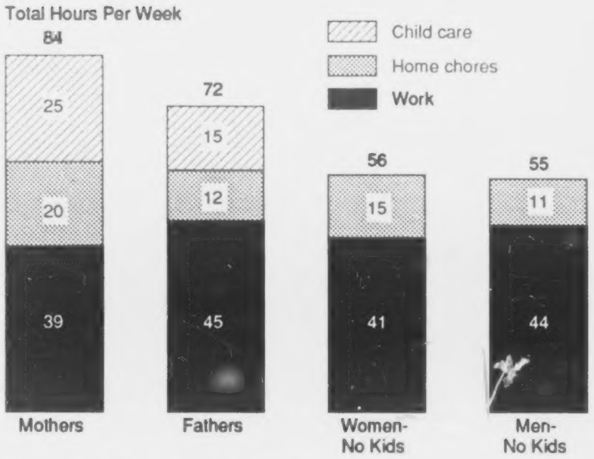
Sanctions. The perception or reality of supervisory disapproval or insensitivity can affect the level of work-family conflict. The fear of job demotion or dismissal could also increase conflict. Sanctions may come from the family as well. An employee commented in one study, "When my kids and spouse begin complaining loud enough, then I spend some time with them."[27] This complaining may be sufficient to increase work-family pressures, or to cause some compensatory action in the world of work.

Job Factors

Work-family conflict can be influenced by 12 different aspects of the job. These sources of conflict relate to time elements, job demands, and features of the work environment.

Chart 1

Hours Spent by Married Persons on Work and Family Tasks



Source: Burden, D., *Family Relations*, January 1986.

Time Elements

1. ***Number of work hours.*** The more one works, the more conflict one is likely to experience. When employees at Merck were asked what work condition most negatively affected their home life, 25 percent said work hours. The total number of hours worked was found to be the most significant predictor of family strain. The length of the work week can have a positive impact on family well-being until the hours exceed the family's expectations.[28] Galinsky distinguishes between excessive work hours, which are found to create the conflict for men, and inconvenient work hours, which are the source of conflict for women. One study reports that the amount of time husbands spend at work creates work-family conflict. The wife's work hours, however, do not seem to affect the husband.[29]

Commuting time may also increase the amount of time spent "working," and has been a factor in creating work-family conflict. For some it is relaxing time alone; for others it is exhausting. According to some studies, stress increases not from the long commute itself, but from the thought of being so far away from home and the children.

2. ***Schedule of hours.*** Some research indicates that the timing of job demands is critical and leads to work-family conflict. It is not the amount of time consumed by work, but rather modifications in the scheduling of work that creates conflict. Overtime, weekend work and travel demands are significantly associated with the

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[26] R.J. Burke and T. Wier, "Impact of Occupational Demands on Nonwork Experiences," *Group and Organizational Studies*, 6(4): 1981, pp. 472-485. See also Michael W. Yogman and T. Berry Brazelton, *In Support of Families*, Cambridge, Massachusetts: Harvard University Press, 1986.

[27] Brice, op cit., p. 3.

[28] Dennis Orthner, Paper prepared for Arden House Symposium, 1988.

[29] P. Keith and R. Schaeffer, "Role Strain and Depression in Two-Job Families," *Family Relations*, 1980, 29, pp. 483-488.

overall perception of conflict.[30] Rapoport reports that spending long periods of time working in other countries leads to work-family conflict in one international company. Shift work creates different kinds of problems; afternoon shifts are found to be harder on parenting; night shifts are harder on marriage.

Scheduling can result in problems if it is incompatible with the schedules of other family members or with the hours of needed community services. These scheduling problems have been determined to be more critical for women than men.

3. ***Control over hours.*** Having unpredictable hours can lead to work-family conflict. Rapoport observes that such patterns are more of a problem for employees at lower levels in the organization. In a study of university personnel, Herman and Gyllstron found more severe work-family tensions among professional staff than faculty. Although the faculty worked more hours, they had more control over their schedules.[31]

Job Demands

4. ***Job autonomy/control.*** The less control one has over tasks and responsibilities, the more likely one is to experience work-family conflict. This will affect workers at lower levels more, who have little freedom in determining how the job should be done. However, it may also be a problem for managers who have very controlling bosses.

5. ***Job involvement/absorption.*** Greater job involvement is associated with more satisfaction at work and with more conflict at home. Job demands may not only involve the commitment of workers, but may implicate family members as well. An example is the role of nonworking wives of senior executives. Two studies report that men in senior management are more absorbed in their work and less available to families. They have poorer relationships with their wives and children as a result. Other research shows that participatory management may increase stress because of the redistribution of responsibility, while workers who are involved, but unhappy in their jobs experience the most stress.[32]

6. ***Job security.*** Jobs in today's era of downsizing and restructuring are less secure. Research suggests that employees who put in greater effort and who are more confident about their employment security have less work-family conflict than other employees.[33] The research does not explain whether high-effort, job secure employees manage their family lives with less conflicts or whether employees from less-conflicted families are able to exert greater effort and feel more job secure.

7. ***Job change.*** A promotion can be a source of increased conflict until the worker feels comfortable in assuming new responsibilities. Demotions and layoffs are likely to have more negative consequences for the work-family relationship. And, according to Galinsky, relocation can be particularly stressful when the worker has no choice, the spouse is not supportive, the new community seems less desirable, or the merits of the transfer are questioned.

8. ***Physical and psychological demands.*** Greater physical or mental demands increase work-family conflict.

Work Environment

9. ***Job climate.*** A positive social climate can reduce work-family conflict. Galinsky's research has determined that health and safety features can reduce the worry that spouses and children have about the workplace.

10. ***Co-workers.*** The sensitivity of co-workers can affect the work-family relationship. Co-workers' willingness to cover for the employee who has a family problem will affect work-family conflicts in a practical sense. Emotionally, co-worker reactions to work departures for family reasons (maternity leaves, early leaving), can lead to work-family conflict.[34] Piotrkowski finds that conflict among co-workers due to these problems can lead to family problems for children up to one-and-a-half years after the tensions were first experienced.

11. ***Supervisors.*** Supervisors can be a source of support or conflict. Some managers permit alternative work patterns or time away from work. Others make employees choose between family and work. The more unsupportive the supervisor, the more conflict the employee (and the spouse) feels.

A 1990 survey conducted by the Families and Work Institute for *Working Mother* magazine found that the key factor in how a boss responds to work and family conflicts is the work status of the boss's spouse: supervisors who have employed spouses are almost twice as likely to be very accommodating of employees' family needs compared to supervisors in single-income marriages. Furthermore, mothers who work for flexible bosses are more than seven times less likely to want to quit, and nearly four times as likely to say they love their jobs than women who work for inflexible bosses.[35]

Supervisor competence is also a factor in the amount of spillover from work to home. In a 1983 study conducted by Bank Street College, employees in one company were asked to select a work condition that had the most negative effect on work life. The one cited most frequently was the supervisor-supervisee relationship.[36]

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[30] Diane Hughes, *Work and Family Life Studies: An Overview of Ongoing Research and Selected Findings*, New York: Bank Street College of Education, 1987.

[31] J.B. Hermann and K.K. Gyllstrom, "Working Men and Women: Inter and Intra-role Conflict," *Psychology of Women Quarterly*, 1977, 1, pp. 319-330.

[32] C.S. Piotrkowski, *Work and the Family System*, New York: MacMillan, 1979, p. 106.

[33] Karen N. Gaertner and Stanley D. Nollen, "The Effects of Internal Labor Markets on Employee Commitment to the Firm," *Proceedings from the 40th Annual Meeting*, Madison, New Jersey: Industrial Relationship Research Association, 1988.

[34] Mark Frankel, "The Dellcrest Families at Work Study," Toronto, Canada, 1988, Unpublished paper.

[35] Dana Friedman and Ellen Galinsky, "Who Makes the Best (and Worst) Boss?," *Working Mother*, July 1990, p. 56-60.

12. ***Policy supports.*** Both the presence of family-supportive policies and the expectation of support make a difference in the level of work-family conflict experienced by employees. Inflexible work policies are most predictive of work-family conflicts. One study found that company-sponsored events that exclude spouses can also be a source of work-family conflict.[37]

Family Factors

The composition, relationships, and structure of families, as well as the support services available to them, have an impact on work-family conflict as described in the following seven variables:

1. ***Marital relationship.*** Partners in dual-earner families make decisions concerning work and family life that affect each other. This theme of mutual interdependence, the sense that husbands and wives have goals that are both individual and mutual, is at the heart of the dual-earner family but is, thus far, barely understood.[38]

2. ***Spouse support.*** Research shows that when a spouse disapproves of the employee's job or performance of household tasks, the employee will experience more work-family conflict. Conflict is most likely to occur when the husband has traditional sex role expectations but the wife does not. Wives, whether employed or not, report more inequity at home than do husbands. Couple competence at domestic task management—or how well couples fight—also affects levels of conflict. Couples with poor relationships tend to have weaker adaptive skills, making them more vulnerable to work pressures and job stress.

3. ***Spouse employment.*** Dual-income families may find more work-family conflict if one partner disapproves of the other working, or if the nature of the job is so demanding that it causes problems for the family. The increased income can mitigate the negative effects of work or family demands.

4. ***Division of labor.*** Division of home labor is the most difficult area to negotiate. Women are less confident of the support they get from their husbands than vice versa. The more housework performed by the husband results in lower levels of depression in his spouse and greater marital satisfaction.[39] However, women who believe they are overburdened by an unfair share of labor at home may be more vulnerable to stressful conditions at work.

For married male employees, neither parenthood nor employment of the spouse appears to have any impact on the amount of time spent on home chores. Burden and Googins found that married men report spending about 12 hours per week on home chores, whether they are parents or not. Married fathers report that their wives (employed or not) spend two to four times more hours per week on home chores and child care than the men admit to. Dual-earner wives do somewhat less housework than homemakers, but dual-earner husbands are not picking up much of the slack. Instead, according to Crouter, dual-earner couples rely more on purchasing services, lowering their standards of household cleanliness and organization, and enlisting the assistance of children.

Other research documents that mothers of preschool children spend 72 minutes per day with their children, compared with 25 minutes for fathers. Mothers of school-age children spend 30 minutes and fathers 15 minutes per day with their adolescents.[40] In Kansas City, a survey of employees in 20 large companies found that 37 percent of employed mothers, and 45 percent of those separated from their spouses, had difficulty combining work and family.

When men feel that their wives are not doing their fair share of the household work, they may feel some stress and experience mild physiological symptoms, such as heart pounding or insomnia, but they do not generally report work-family conflict. The same does not hold for wives and mothers, where the perception that the husband is not doing his fair share leads to conflict. DeLong finds that men feel the greatest conflict when their wives expect them to spend more time with their children. Men with more egalitarian outlooks experience conflicts similar in nature and intensity to women.

Anecdotal reports indicate that men are increasing their share of family responsibilities. Companies report a slight increase in fathers taking paternity leave; and more fathers are asking for and gaining custody of their children after divorce. Pleck's research shows that the proportional (not absolute) time spent on home chores between men and women is narrowing as men do slightly more and women do slightly less.

Perceptions and expectations are critical. Spouses are more likely to be satisfied with their marriages if they perceive that their partners are doing more than their share—even if the actual time varies from minutes to hours.[41] Marriages may also be viewed positively when women retain responsibility for overseeing family work. As Galinsky notes, they are the gatekeepers of men's childrearing involvement.

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[36] Diane Hughes and Ellen Galinsky, *Balancing Work and Family Life: Research and Corporate Application*, New York: Bank Street College of Education, 1988, p. 9.

[37] Ann C. Crouter, "Rethinking the Dual Earner Family From a Life Course Perspective," Pennsylvania State University, 1986.

[38] Repetti, op cit.

[39] Joseph H. Pleck, *Working Wives, Working Husbands*, Newbury Park, California: Sage, 1985.

[40] S. Yoger and S. Brett, *Patterns of Work and Family Involvement Among Single and Dual Career Couples: Two Competing Analytical Approaches*, Washington, D.C.: Office of Naval Research, 1986.

[41] Diane Hughes and Ellen Galinsky, op cit, p. 2.

5. ***Family size.*** The larger the family (particularly those with a high number of children), the greater the potential for work-family conflict. Even though older children may help with younger siblings, the logistics and costs of three or more children lead to more conflicts between work and home.

6. ***Age of children.*** The presence of children under six will increase work-family conflict for mothers and fathers—but more for mothers. With adolescent children (12-18 years old), the level of work-family conflict equalizes. A study at Merck & Co. reports that 68 percent of mothers and 51 percent of fathers with children under six experienced high work-family conflict. When children were 12-18 years old, conflict was reported by 40 percent of men and 37 percent of women, although other studies find that women's levels of conflict remain higher than men's. It may be that fathers with teenagers feel more compelled to spend time with older children before the children leave the nest. DeLong finds that younger fathers (under 40 years of age) generally want more time with children.

7. ***Presence of adult dependents.*** At the Buffalo office of The Travelers Companies, 85 percent of caregivers said their caregiving responsibilities interfered with some aspect of their life. Seventeen percent had not had a break from caregiving in more than a year and 22 percent had not taken a vacation in two years.[42]

8. ***Support services.*** For both child care and elder care, problems with support services might relate to finding care, satisfaction with services, cost, stability and reliability of care and the number of arrangements needed. The arrangements for elder care are often complicated by the fact that a significant portion of caregivers have responsibility for aging relatives who live more than 50 or 100 miles away from them.

When child care is inflexible or unstable, parents may experience work-family conflicts. Emergency backup is central to a good work-family fit. Parents are most unhappy about the external aspects of child care: hours, cost, location. According to parents in one study, the most important criteria for selecting child care are health, safety, overall quality, and the attention the child receives.

Impact on Different Employee Groups: Does Sex or Money Matter?

The levels and nature of work-family conflict vary for men and women, and for workers within different income groups and job categories. One bias can be noted in the current body of work-family research: the principal focus of research concerning men has been on job factors, while family factors dominate investigations of conflict for women. Another shortcoming in the research is that blue-collar and low-income workers have been studied far less extensively than the more affluent (and autonomous) managers.

Effects on Men versus Women

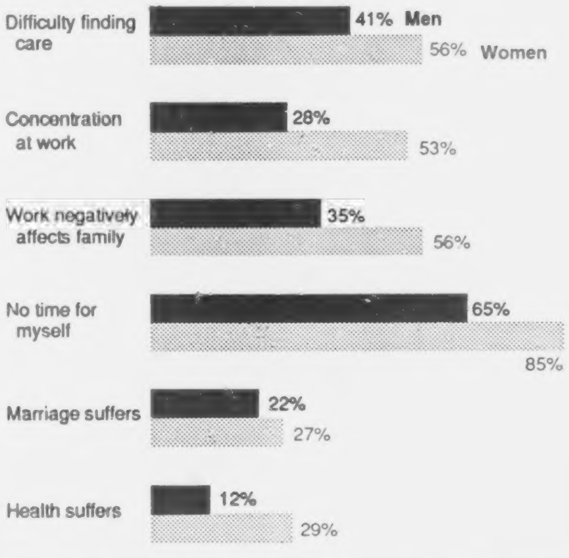
Men and women experience work-family conflict differently. At a very basic level, work-family conflict occurs for a man when he loses his job and for a woman when she takes on a job. A man is typically seen as bringing more than one full-time person to the job, with the wife as an asset, while a woman is seen as less than one full-time worker, with the family a distraction. It is assumed that women will have a divided allegiance to work at best, and are much more likely to favor the family over work. Men, especially those with wives at home, are supposedly more committed to work.

In an overview of gender-related findings presented at the Arden House Symposium, Fran Rodgers, president of Work/Family Directions, Inc., reported that about a fourth of employees questioned, regardless of occupational status or gender, concede that their marriages suffer because of work-family tradeoffs. Men, when asked "Do you think having a family enhances your work performance?", were far more likely to say yes than women. Whatever positive effects there might be of family on work, it appears they are more likely to be present for men.

Women still assume primary responsibility for family life (see Chart 2 and Table 4). Yet the most

Chart 2

Work-Family Conflicts Reported by Women and Men



Source: Rodgers & Associates, Surveys Conducted in 1985 and 1988.

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[42] Gary D. Brice, David Carstense, and Marlen Kwiatkowski, "A Profile of the Travelers Insurance Company, Buffalo Office, Employee Caregivers to Older Adults," University of Buffalo School of Social Work, 1987.

Table 4: Work-Family Conflicts Described by Honeywell Employees

	Married No Children	*With Children Under 18*		*Dual Earner Couples Under 35 With Children*	
		Men	*Women*	*Men*	*Women*
Family Concerns Affect Work:					
Concentration and judgment affected *often*	21%	34%	40%	28%	53%
Work goals affected	28	44	52	60	68
Work Pressures Affect Family:					
Family relationships	24	39	43	35	56
Lack of time for family	18	35	53*	32	62
Combining Work and Family is *very difficult*	13	31	49*	25	56
Work/Family Affects Individual:					
Overwhelmed by family concerns	12	18	47*	9	53
Usually too tired, stressed from work, for family	18	24	44*	22	57
Family expects too much	15	18	50*	12	49
More stress this year	41	47	54	47	69
No time for self	40	59	86*	60	95
Specific Family Problems:					
No time for children	3	31	44	31	50
No time for spouse	19	33	54*	35	50
Child care		24	32	72**	65**
Sick child care		19	42	53**	65**
Financial problems	12	19	38*	12	44
Dual-earner problems	15	25	40	70**	63**

* Significant difference of 20 percent between men and women.

** Significant difference of 20 percent between all women and women under 35, and between all men and men under 35.

Source: *Work and Family Survey: Productivity Issues and Family Concerns*, October 1986, Honeywell.

important conclusion of research comparing men and women is that work-family conflict is not a gender issue. More accurately, it is related to family roles and responsibilities which are traditionally based on gender.[43] When men take on family responsibilities that women now perform, they suffer the same conflicts and consequences as women, personally and professionally. In a three-company study in New England, Burden and Googins found that gender was not relevant to the incidence of depression or reduced health and energy among employees. Work-family conflict and low salaries were greater determinants of this strain. While mothers in the study were more likely to have problems, men with work-family conflict and low pay reacted exactly the same as women—with reduced physical and emotional well-being.

Another study, by Etzion, concludes that success and self-fulfillment on the job do not preclude a man's success in private life, but for women, success at work may mean failure or dissatisfaction at home.[44] A 1987 *Business Week* survey of 50 top women in business who were compared to a group of equally successful men, reported that half of the women in these senior positions had never been married or were divorced. Half of those married had no children. About 95 percent of the men in comparable positions were married and had children.

In order to achieve equally at work, it appears that women must make significantly more sacrifices than men in their personal lives (see Chart 3, page 22). These views were outlined in a *Harvard Business Review* article by Felice Schwartz, who recommended that companies identify early in their careers women who are likely to have children, and then allow them to develop their careers slowly on what others have dubbed the "mommy track."[45]

According to Etzion: "Women who aspire to high-level careers do so within a societal context of expectations that has traditionally relegated their primary role to the family. They are not likely to receive the same level of social support for their decision. Women tend to have feelings of self-blame and guilt for compromising the traditional feminine role. Thus, the perception and consequences of any particular work-family combi-

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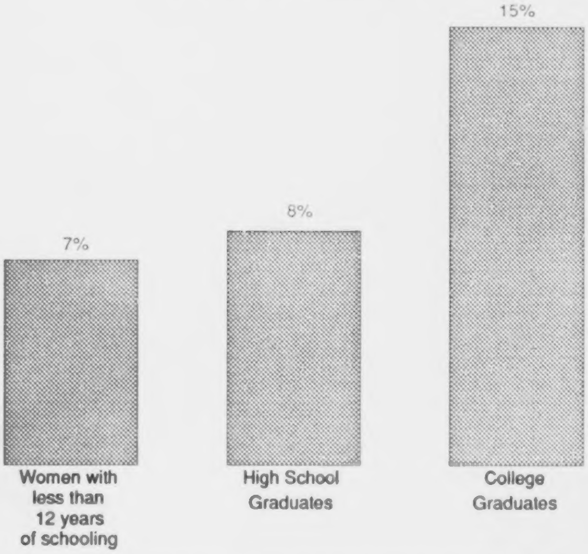
[43] Ann C. Crouter, "Spillover from Family to Work: The Neglected Side of the Work-Family Interface," *Human Relations*, Vol. 37, No. 6, 1984, p. 435.

[44] Dahlia Etzion, "The Experience of Burnout and Work/Non-work Success in Male and Female Engineers: A Matched Pair Comparison," *Human Resource Management*, Summer, 1988, Vol. 27, No. 2, pp. 166, 171.

[45] Felice N. Schwartz, "Management Women and the New Facts of Life", *Harvard Business Review*, January-February, 1989, pp. 65-76.

Chart 3

Women Age 30-34 Who Expect to Remain Childless



Source: U.S. Bureau of the Census. Current Population Reports, Series P-20, No 436. Fertility of American Women; June 1988. Issued May 1989.

nation are likely to be different for women than they are for men."

Women also seem to face a two-way bind. They are more likely than men to report that their jobs make it hard to accomplish personal and marital tasks and that family responsibilities interfere with work. For men, problems at work may spill over into the family, but not the reverse. Similarly, the source of work-family conflict for men is typically in the work arena, such as job demands and relationships with supervisors, according to Galinsky's research. For women, the problems tend to originate at home. Women experience conflict when their husbands have traditional values and do not approve of their working or complain about the amount of time they spend on housework. Men experience conflict when their wives complain about the amount of time they spend with the children.

Rodgers reminded the Arden House audience that the research on work and family issues is related to the research on the mental health of women because it is also strongly influenced by whether they are satisfied with their situation. She noted: "If a woman is home, but would rather be working, she is under a lot of stress. Similarly, if she works, but would prefer to be at home, she also experiences stress."

Rodgers urged caution in the comparisons made between men and women in the research: "When you compare all the men and women in the company, you are inevitably comparing a population of older men and younger women. If you do not control for age, you may think you are looking at a gender effect when what you really have is an interference of age and lifestyle differences." Male-female differences may also be a function of job level, since the sample of men is likely to be more weighted toward managerial and professional jobs. Rodgers concludes that: "The closer you get to comparing the men and women in full-time working families where two people experience similar pressures, the more they begin to look alike in their responses to work-family conflicts."

Though women have moved up the corporate ladder, their progress has been slow and contentious. The percentage of women in management and administrative jobs increased from 24 percent in 1976 to 37 percent in 1987.[46] A 1989 survey by Korn/Ferry International of all Fortune-1000 companies found that of the top five jobs below CEO at each firm, only 3 percent are held by women (up from 1 percent a decade ago).[47] The question is whether the differences in family responsibilities and resulting work-family conflict explain the gender differences in career paths. Rodgers comments: "If you ask women how far they are going to get in a company, or what prevents them from going further in their careers, family differences are not the major factor. It is the issues in the culture related to being a woman, such as the old boy networks, concepts of leadership, and use of power." Family factors then are only part of the reason why women are slow to move into senior management.

The Wick study, which triggered much debate, involved 60 women managers and professionals with 5 or more years of experience in a Fortune-500 company. Only one woman reported that she stayed with her original firm because it provided child care assistance. Furthermore, none said they left their company because of work and family conflicts. The authors conclude that "while corporations are attending to women's personal needs (such as child care and maternity leave), their professional needs are being ignored."[48]

Rodgers found these results to be incomplete. The Wick study sample included only 22 women with children. In the studies conducted by Rodgers and Associates, which represent the experiences of 30,000 employees, the authors conclude that family concerns may be a significant reason, but not the only reason why women leave. Fran Rodgers comments, "It is only part of the story to conclude that stalled careers cause women to leave their employers, when, in fact, careers are often stalled because of family responsibilities."

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[46] Janice Castro, "Get Set: Here They Come!", *Time Magazine*, Special Issue: The Road Ahead, Fall, 1990.

[47] Dana E. Friedman, Helen Axel, and Lisa M. Lasky, *Women in the Corporation: A Briefing Book*, New York: The Conference Board, 1988.

[48] Victoria Tashjian, "Women of the Corporation: Growing or Going?", Wilmington, Delaware: Wick and Company, 1989.

It is true, however, that women are more likely than men to refuse promotions, overtime, travel, and transfers—the experiences which are often necessary to move up in the organization (see Chart 4). (This may also be a factor of age or marital status.) Women, particularly those with young children, report that their family obligations limit their career opportunities.

Until very recently, a major tenet of the women's movement has been that equality should be pursued in the workplace without demands for special treatment. The companies responded and created a work environment that would allow women, if they acted like men, to advance as quickly as men. We now find that women are absent more than men, and they have twice as many hours of responsibilities for work and family. Rodgers concludes: "Companies believe they have created a level playing field where men and women can advance if they behave the same way. We now know that there is no level playing field because people come to it with entirely different sets of responsibilities."

Occupational Status and Income Groups

Beth Shinn, of New York University, presented a review of research at the Arden House symposium related to differences in income groups. She reported that the literature on life satisfaction suggests that more income is better. More income may also reduce stress. Whether money results in less work-family conflict or not, however, is not as clear. Shinn points out: "It is important to recognize the perception that higher status jobs will lead to more work interference with family time, and that it is an important reason for refusing that kind of work."

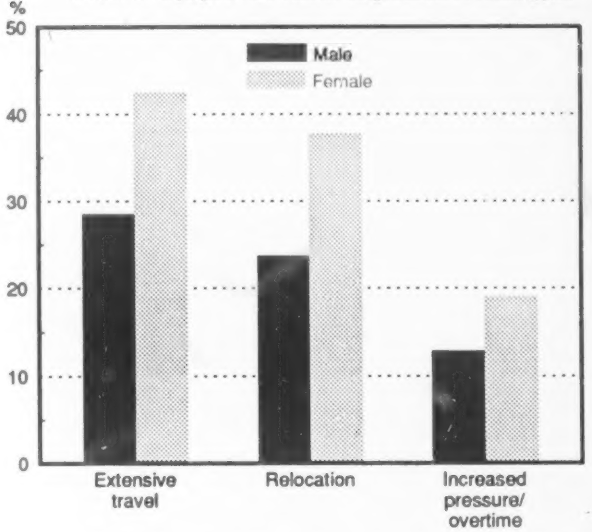
Frankel's research concludes that middle managers have the least work-family conflict because they can delegate work to subordinates and expect flexibility from their superiors. Senior managers, who have overwhelming and consuming work, and lower-level managers who have less control over their work hours and tasks, experience more conflict. Hughes' study concludes that first line supervisors have the highest conflict because of pressures from above and below.

Managers, at all levels, generally are more likely than non-managers to have the flexibility and resources to deal with work-family problems. On the other hand, managers work longer hours, have more pressures and responsibilities, and are more likely to take work home, travel, and be relocated. A study by The National Council of Jewish Women finds that women in professional and managerial jobs have the greatest difficulty combining work and family after childbirth. Professional women tend to place high value on their jobs, which are important to their self-esteem. But they are more likely to change their feelings about work once they become mothers, and feel more conflict about their dual roles.

Chart 4

Parents Turning Down Jobs

Percent of employees with children citing reasons for refusing jobs



Source: Rodgers and Associates. Surveys conducted in 1985 and 1988.

Orthner's research finds that stress is increasing fastest for upper income groups. Because of their investment in work, managers have more fragile support networks making it more difficult to balance work demands with family demands. Emlen finds that upper-income families are more likely to have children caring for themselves, usually of school-age, and this leads to a variety of work-family problems.

Employees in lower level jobs, on the other hand, have less control over work hours and may suffer more serious consequences for absences and tardiness. They are also less likely to have access to telephones or the freedom to make personal calls. These employees appear more likely to worry more about their children or elders at work because they may be unable to purchase adequate care.

Lower-income employees are more likely to quit their jobs to care for aging relatives. People with higher incomes tend to be care-managers rather than caregivers of the elderly—they arrange and pay for care rather than provide it.[49] One study compares women who quit their jobs to become full-time caregivers with women who remained on the job while assuming elder care responsibilities. The working women came from higher socioeconomic backgrounds, were better educated, had higher-level jobs, and viewed their work as a career rather than just a job.[50]

The importance of career varies at different stages of the life cycle. According to one study: "The occupa-

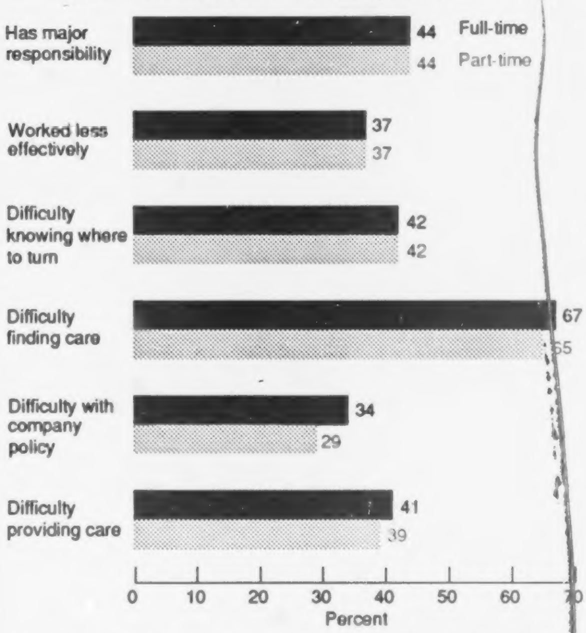
[49] American Association of Retired Persons, *A National Survey of Caregivers: Final Report*, Washington, D.C.: AARP, 1988.

[50] Elaine M. Brody, "Parent Care as a Normative Family Stress," *The Gerontologist*, Vol. 25, No. 1, 1985.

Chart 5

Women Employees Caring for Adult Dependents

Percent of full and part-time employees reporting responsibilities and problems in providing elder care



Source: Arthur C. Emlen, Paul E. Koren, and Dianne Louise, 1987 Dependent Care Survey: Sister of Providence Final Report, Regional Research Institute, Portland State University.

tional orientation of men tends to relax somewhat during the late 30s and early 40s during which time they seek a greater balance between work and family." The focus groups conducted at Corning Inc. found that work-family needs and wants differ from decade to decade. The director of quality management at Corning Inc., concludes that women between the ages of 20 and 30 are primarily concerned with career advancement. Those between the ages of 30 and 40 focus more on children than career, while those aged 40 to 55 begin working on a career that may have plateaued.

Evans and Bartolome find that managers from ages 27 to 34 are most concerned with work and career. Between ages 35 and 42, family and leisure become more prominent. This is also the age when men are most likely to refuse to relocate. Over age 43, the balance between work and family is more stable. Some feel they missed out on their kids growing up. As Paul Sarbanes remarked when retiring early from Congress to be with his family: "No one was ever on their death bed saying they wished they had spent more time at the office." Other managers in this age group have plateaued in jobs that are stressful or routine. These managers are disengaged from the family as concern for work dominates because of the need to maintain job security until retirement.

It appears that as one moves up the hierarchy of an organization, the spillover from work to family increases. At lower job levels, however, the spillover may occur in the opposite direction, from family to work.

Full- and Part-Time Workers

The study at the 20 Sisters of Providence Hospitals in the Northwest is one of a few comparing large samples of full- and part-time workers. Almost a third of employees (29 percent) at the hospitals work part time. Although more women on average work part time than men, the difference in hours is even greater when the comparison is restricted to mothers and fathers.

Shorter work hours that allow more time at home reduce the cost of child care, but many child care programs do not accept children of part-timers. The Sisters of Providence study also found that child care stress is slightly greater for part-time mothers. For example, whereas mothers working full time can take a vacation day when their children are sick, the part-time mothers often do not have paid time off. Emlen concludes: "While part-time employment appears to diminish the financial burden of child care to some extent, it brings other problems which many employees find hard to solve."

Both part-time and full-time employees indicate similar levels of difficulty in finding and providing care, and a lessening of job effectiveness due to elder care responsibilities (see Chart 5). According to Emlen: "The pattern of similarities suggests that there is little point in differentiating full-time and part-time employees when addressing adult dependent care issues. While the differences found in the parallel child care analyses might reasonably be attributed to inflexibility in the child care market and other provider vicissitudes, the same factors do not appear to operate in the arena of adult dependent care. This is not to say that the difficulties encountered by employees in this area were minor; rather the main issues here are not as closely linked to the amount, variability, and scheduling of time on the job."

Specific Family Problems In the Workplace

As employees assume work and family responsibilities, specific areas of conflict are likely to emerge. The report now examines the impact of stress, pregnancy, child care, and elder care. While this review does not cover the entire work-family field, it focuses on issues that have been studied and areas in which workplace programs have been developed.

Stress

Stress is both a cause and a consequence of work-family conflict. While some stress is beneficial in stimulating productivity, it is also a growing health issue for business, leading to poor job performance, absenteeism, and a variety of health problems. The National Council on Compensation Insurance, which tracks activity in 32 states, contends that mental stress claims have increased fivefold in the past five years.[51] The American Medical Association estimates that 80 percent or more of medical problems are stress-related.[52] Numbers such as these lead some observers to put the toll of stress on society at $150 billion.

By examining the work-family components of stress, it is evident that problems often stem from the constancy and duration of strain rather than from the stress associated with a catastrophe or sudden change. While major events—such as having a baby, moving, and losing a promotion—are capable of creating stress, work-family concerns bring to human resources management a perspective on daily stresses and strains. Etzion warns of the danger of overlooking this more insidious form of stress: "It is claimed that continuous, hardly recognizable, and most denied misfits between personal characteristics and environmental demands are the source of a slow and hidden process of psychological erosion....The mini-stressors of misfits do not cause alarm and are rarely subjected to any coping efforts. Thus the process of erosion can go on for a long time without being detected."[53]

In a study of 86 upper middle-class working couples with children, Northwestern University researchers found different stress levels for men and women when faced with the prospect of restructuring their jobs to accommodate children. The women surveyed cut down on hours and travel and made more sacrifices than their husbands, but they seemed to take the changes in stride. The men made fewer changes, but had more difficulty managing the conflict.[54]

Research at 33 Oregon worksites found that between a third and two-thirds of employees reported some degree of stress, depending on the source and the responsibilities of the employee (see Table 5). For instance, employees caring for an aging relative experience more stress than parents with child care responsibilities. All populations report significantly higher stress levels related to their jobs than to caregiving or parenting.

In addition to jobs and caregiving, family finances were a source of stress for 39 percent of men and 54 percent of women in a University of Missouri study.

Table 5: Employees Reporting Stress Due to Work-Family Conflict

	All Employees	*All Men*	*All Women*
Sisters of Providence	54	NA	NA
33-company study:			
Due to child care	43	38	49
Due to elder care	52	42	63
Due to job	71	69	74

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[51] "Mental Stress Exacts a Rising Toll in the Workplace," *Wall Street Journal*, Labor Letter, January, 1989.

[52] "Stress on the Job," *Newsweek*, April 25, 1988, pp. 40-48.

[53] Dahlia Etzion, op cit.

[54] *Newsweek*, op cit.

Emlen finds that, generally, the higher the income, the lower the stress related to child care. The University of Missouri study also reports that employees with out-of-home child care appear to have more stressful lives than employees with other child-care arrangements. In the *Fortune* magazine study, child-care breakdowns were associated with stress-related problems.

Pregnancy

Pregnancy and childbirth can create problems for employees and their jobs. Prenatal care is expensive and may require time away from work for visits. Most pregnant women experience some periods of fatigue or sickness which affect their work performance. All must stop work, even if for a few days, for delivery and convalescence. The costs of childbirth and neonatal care are expensive. And the worry about finding suitable infant care or about returning to work sooner than they are ready can have a negative effect on work performance.[55]

A 1986 Catalyst study found that women typically return to work within six months.[56] Women at the top and bottom of the salary scale tend to take shorter leaves of six to eight weeks. Lower paid women cannot afford to take unpaid leave, and high-earning women worry about jeopardizing the positions they have achieved. Anecdotal evidence provided to the National Council of Jewish Women (NCJW) by one large corporation that offers two months of unpaid leave following the period of disability, suggests that few women take advantage of the leave because it is unpaid. Less than one-half of women request any family leave following disability leave, and only one in five takes the full two months offered.[57]

T. Berry Brazelton, an influential pediatrician at Harvard Medical School, believes that a minimum of four months is necessary before mother and child are able to establish a secure, loving relationship. A child without that firm attachment may remain insecure in relationships throughout life, Brazelton contends. A mother who leaves her child before feeling that intimate bond is likely to carry guilt and longing with her to the job. Brazelton believes that such mothers experience "detachment" that negatively affects their work. Brazelton stated at a 1986 Conference Board Symposium on parental leave: "This detachment not only endangers her relationship with her baby and her mate, but also her relationship with herself and her feelings of competence, security, and independence. We know this detachment has gone on for a long time with fathers. We are ending up with people in the work force unable to work at full capacity."

In a series of interviews that Catalyst conducted among executive-level mothers, one group of women felt they had been pressured to return to work sooner than they were physically or emotionally ready. As a result, they felt over-extended and unable to manage either work or family responsibilities. Another group of executive women who felt better about the leaves they had taken were more satisfied with their lives and productivity at work. This group of mothers had more suitable child care arrangements and more supportive husbands. Catalyst points out that the level and intensity of the woman's job and work environment play a critical role as well.[58]

Among the 2,600 women participating in the NCJW study, 52 percent found that pregnancy made it more difficult to do their jobs, and more than half changed their work schedules or job responsibilities while pregnant as follows:

- 53 percent did less strenuous work;
- 46 percent worked fewer hours;
- 24 percent traveled less;
- 11 percent changed shifts; and
- 10 percent worked at home.

The quit rate for new mothers is considerably lower than commonly expected. Many managers seem to believe, or at least fear, that the majority of women on leave will not return to work after their period of leave. In the NCJW study, of the 1,117 women who were no longer on leave, only 14 percent had quit instead of returning to work after taking leave. A very similar finding was made by the General Accounting Office when estimating the costs of implementing the proposed Family and Medical Leave Act.[59] In its survey of firms, more than 84 percent of women taking leave returned to work within 10 weeks. A Rand Corporation study of women interviewed in 1983 found that 82 percent returned to work within the first three months after giving birth. Based on these findings, one could assume that of the 2.2 million women workers who gave birth or adopted children in 1986, approximately 1.8 million resumed their employment following their leave.[60]

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[55] James T. Bond, *Accommodating Pregnancy in the Workplace*, New York: National Council on Jewish Women, November, 1987.

[56] *The Corporate Guide to Parental Leaves*, New York: Catalyst, 1986.

[57] Summary Statement of James T. Bond, Director, National Council of Jewish Women, Center for the Study of the Child, to U.S. House of Representatives, Subcommittee on Labor-Management Relations and on Labor Standards, March 5, 1987, p. 2.

[58] *Catalyst, Career and Family Center, Maternity and Parental Leaves of Absence*, New York: March, 1983, p. 7-8.

[59] U.S. Government Accounting Office, *Parental Leave: Estimated Costs of Human Resources 925, the Family and Medical Leave Act of 1987, Washington, D.C.: GAO/HRD 88-34, November, 1987, p. 13.*

[60] Arlene Leibowitz, Jacob Klerman, Linda Waite, Christina Witsberger, *Women's Employment During Pregnancy and Following Birth*, Palo Alto, California: The Rand Corporation, Prepared for presentation at Econometric Society, December, 1988.

According to the Rand study, the later a woman leaves her job during pregnancy, the more likely she is to return to work after delivery. "Among the women who quit work in the first trimester of pregnancy, 14 percent returned to work in the first quarter after the birth. Of women who left work in the second trimester, 16 percent had returned in the first quarter. But among women who worked 27-37 weeks into their pregnancies, fully 40 percent returned to jobs in their first quarter after the birth."[61]

Another study found that women with some college, and those with greater amounts of work experience, leave the labor force later in their pregnancy and reenter sooner than women with less education or experience.[62] It would appear from these findings that professional women are more attached to their jobs and less likely to let parenthood stop their career pursuits. Although no data are available on the later careers of women who choose to stop working after childbirth, anecdotal evidence from companies suggests that these women focus on the family for a period of time and then eventually return to the paid labor force.

The most important predictor of retention following childbirth is the availability of job-guaranteed maternity leave. Evidence of this is reviewed in Part Two.

Child Care

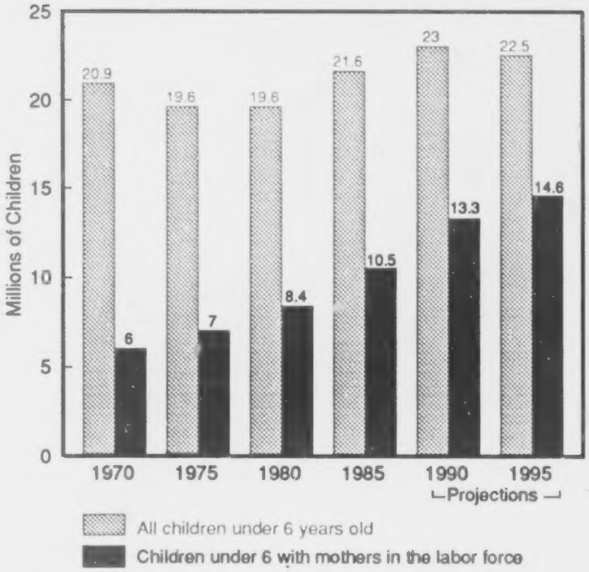
The limited supply and quality of affordable child care causes working parents to miss work or feel stressed about their children in someone else's care. According to government statistics, working parents constitute roughly 37 percent of the workforce. About 17 percent have preschoolers needing child care. This will increase in the next decade, since about three-fourths of working women are in their childbearing ages. According to the Bureau of Labor Statistics, most of these women will get pregnant during their working years and more than half will return to work before their child's first birthday.

While the preschool population is not expected to rise significantly during the 1990s, 40 percent more children will need care because their mothers are working. Sandra Hofferth of the Urban Institute predicts that by 1995 two-thirds of preschool children will have working mothers, up from about half today (see Chart 6).[63]

Of the 11.3 million children under age six whose mothers worked in 1985, almost half (48 percent) were in the care of relatives. Another 6 percent used in-home care, such as a nanny, au pair or housekeeper. The rest used out-of-home care by a nonrelative: 23 percent used a day care center or nursery school, and 22 percent relied on family day care, that is, a neighborhood woman caring for up to five children in her own home.[64] These rates indicate a decline in care by relatives and sitters in the home, small increases in family day care, and dramatic increases in center-based care (see Chart 7, page 28).

Chart 6

Preschool Children with Mothers in the Labor Force, 1970-1995



Source: Hofferth, S. "The Current Child Care Debate in Context," Bethesda, MD: National Institute of Child Health and Development, May, 1988.

In 1986, there were an estimated 63,000 child care centers, of which 40,000 were in operation. These centers had a capacity of approximately 2.1 million children. The number of centers has doubled over the past 10 years.

The number of family day care homes is more difficult to estimate because a sizable portion of them—somewhere between 50 and 90 percent—are unlicensed. In 1986, there were 165,000 licensed homes, of which 105,000 were in operation. These homes had a capacity to serve a half million children. Since 1977, licensed family day care homes increased by about one-third.[65]

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[61] Ibid.

[62] Steven D. McLaughline, "Differential Patterns of Female Labor-Force Participation Surrounding the First Born," *Journal of Marriage and the Family*, Vol. 44, 1982, pp. 407-420.

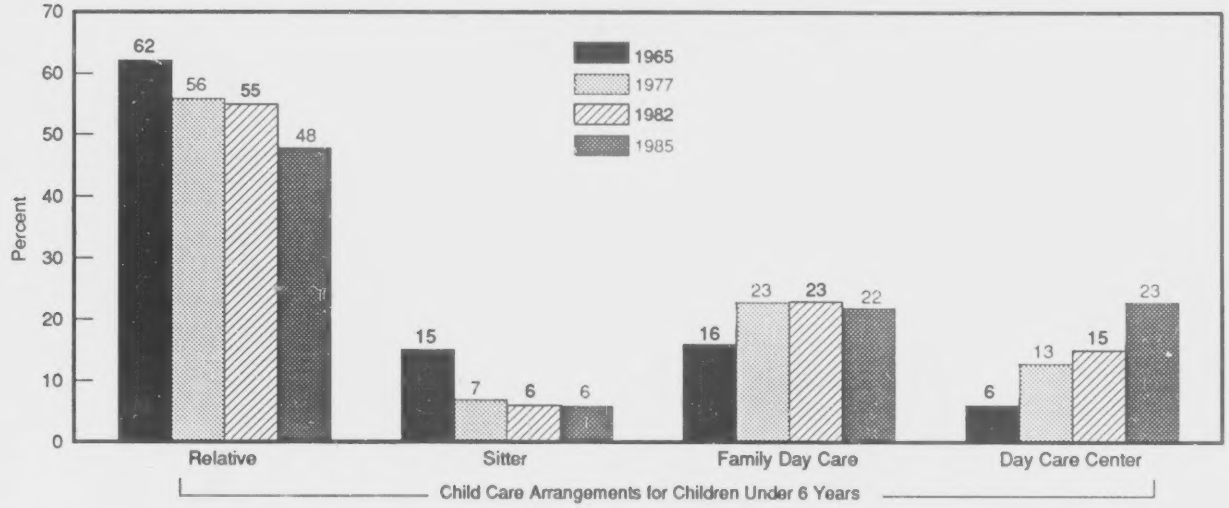
[63] Sandra L. Hofferth, "What is the Demand for and Supply of Child Care in U.S.?," Washington, D.C.: Urban Institute, Testimony presented before House Committee on Education and Labor, 1989.

[64] Sandra L. Hofferth, ibid.

[65] For estimates of child care supply, see Ellen Eliason Kisker, Rebecca Maynard, Anne Gordon, and Margaret Strain, *The Child Care Challenge: What Parents Need and What is Available in Three Metropolitan Areas?*, Princeton, New Jersey: Mathematical Policy Research, Inc., 1989, p. 5; William R. Prosser, *Day Care Centers: 1976-1984*, Social Services Policy Technical Analysis Paper, Washington, D.C.: U.S. Department of Health and Human Services, 1986; Patricia Divine-Hawkins, *Family Day Care in the United States: National Day Care Home Study Executive Summary*, DHHS Publication No. 80-30287, Washington, D.C.: U.S. Department of Health and Human Services; Sandra L. Hofferth and Deborah A. Phillips, "Child Care in the United States, 1970-1995," *Journal of Marriage and the Family*, 49, August 87, pp. 559-571.

Chart 7

Care of Preschool Children, 1965-1985



Source; Hofferth, Sandra L., "What is the Demand for and Supply of Child Care in the U.S.?" (Testimony before the House Committee on Education and Labor), February 9, 1989, The Urban Institute: Washington, D.C.

Hofferth estimates that with these 2.6 million licensed slots (in centers and family day care homes), about half of the 5.3 million children using out-of-home, nonrelative care are in unlicensed programs. She concludes that the shortage may, in fact, be a deficiency of *licensed* slots.

A child care shortage indicates that parents will have difficulty finding care, which may result in a search requiring time at work to make phone calls or time away from work to make visits. It may also result in a child care selection that is less than satisfactory or too expensive, adding either emotional or financial strain. These daily strains coupled with the emergencies created by sick children, sick providers, or child care breakdowns lead to employee absences—a point at which most child care problems meet the bottom line.

Absenteeism

Various child care problems may result in full-day or part-day absences. In the *Fortune* study, about 39 percent of parents had come to work late or left early, with 20 percent doing so three or more times in the past three months. Of those who missed part of the work day, 72 percent had been absent because of family obligations. A survey at Allstate Insurance Company found that almost half (49 percent) of parents had been late or left early at least 5 times during the 3 months prior to participating in the survey due to child care problems.

On average, employees arrive late or leave early due to family obligations about 1.8 days every 6 months. Women have twice as many latenesses or early departures as men (women average 2.4 days among 5 companies; the men average 1.2 days). Home care is associated with the least disruption at work. Out-of-home child care is associated with being late, leaving early, and missing days. According to Emlen and Koren, the greatest disruption results from children looking after themselves.

In a study at Adolph Coors Company, 77 parents reported missing 230 days in a 6-month period, or 460 days per year, due to child care problems: 146 days (63 percent) were absences due to sick children; 65 days (28 percent) to child care; and 19 days (8 percent) to breakdowns in child care (see Table 6).

Sick Children

Childhood illness is a major cause of unavoidable employee absence. Children under the age of 12 average 5 days of sickness per year. The 1990 National Child Care Survey found that about half (51 percent) of employed mothers who reported that their child was sick in the last month missed work to care for that child. Fifty-seven percent of the respondents to the *Fortune* study reported that finding care for a sick child was a serious problem. Fernandez observes that sick child care heads the list among 15 possible child care problems, especially for women who typically are the ones to stay home with a sick child.

Parents resort to a variety of strategies to take time off for sick children. At one large hospital, 36 percent

Table 6: Absenteeism and Child Care Problems

Percent of parents missing work and number of days absent due to child care problems.

	Percent who Missed Work	*Total Days Missed*	*Men*	*Women*
Company A (pharmaceutical)			.4	1.1
Company B (financial services)			.6	1.5
Company C (home products mfr.)			1.1	1.6
Company D (pharmaceutical)			.4	1.1
Coors:				
Due to sick children	63%	4.6[1]		
Looking for child care	28	6.2[2]		
Company E (high technology)		1.76		
Company F (computer)			1.0[3]	2.9[3]
Sick children			.5	1.7
Doctor's appointment			.3	.8
Child care problem			0	.1
33-company study		6.92	6.08	7.79
Sisters of Providence	31[4]			
Company G (insurance)	19[5]			

[1] Based on 53 employees; 55 Coors employees missed an average of 2.6 days per 6 months. Number equals total days missed over 6-month period.
[2] Based on 14 employees.
[3] Includes parents with children under 6.
[4] Percent absent at least once in previous month.
[5] Percent absent 4 days or more in previous 6 months.

of parents took a day off without pay, another 30 percent took a personal sick day, and 24 percent took vacation. At the 33-company study in Oregon, 50 percent of the parents took a vacation day. Among full-time workers, women were far more likely than men to take a day without pay to care for a sick child (24 percent compared to 4 percent of fathers). Men were more likely to take a personal sick day (24 percent compared to 13 percent of women).

Whether a parent stays home with a sick child depends on the nature of the illness, the availability of backup support, and the personal inclinations of the parents. In a study at Manville Corporation, among 17 percent of employees who had lost time from work due to sick children, two-thirds said they did not want their children home alone. Another fourth did not know a provider, and over a fifth could not afford one. It is clear that the value one places on certain family relationships and responsibilities will affect job motivation and, ultimately, the employee's choice between going to work or staying at home. The Coors study concluded: "Based on self-disclosed survey results, employees with children miss two to three days every 6 months due to sick children. If 47 percent of our Coors employees have children needing child care and 47 percent of these employees miss 2 to 3 days of work because of sick children, a metro-Denver employee population of 8,000 employees (including all Coors companies), means approximately 3,530 to 5,300 work days are missed every 6 months, or 7,060 to 10,600 days a year. At an average wage of $120/day, sick child absenteeism costs Coors $847,200 to $1,272,000 a year! Add the cost of replacement employees and reduced productivity, and sick child cost to the company is even higher."

Finding Child Care

Emlen found that employed mothers with children under age 12 who report difficulty finding child care are twice as likely as other mothers to make arrangements with which they are dissatisfied. They are also twice as likely to report worry or stress about child care, twice as likely to say that combining work and family responsibilities is difficult, and many times more likely to feel that child care is difficult to continue or maintain. These difficulties reach the workplace in the form of lost time and stress.

The match between local supply and local demand determines how difficult the child care search will be. Also, the type of care sought makes a difference. In one company survey, 79 percent of parents had problems finding care for their sick child, 60 percent reported a difficult search for infant care, 54 percent reported difficulty locating school-age care, and 39 percent said child care for their preschoolers was hard to find. Mothers typically report more difficulty finding care than

Table 7: Difficulty Finding Child Care

Percent of parents reporting difficulty finding child care.

	Total	*Fathers*	*Mothers*
Sister of Providence Hospitals	64%	NA	NA
3 New Jersey firms	54	NA	NA
Large Northeast pharmaceutical firm	50	42%	53%
33-company survey, Oregon	46	37	56
Large Midwest insurance company	36	NA	NA
Large East Coast computer company	30	NA	NA
New Jersey pharmaceutical firm	NA	56	71
Apparel manufacturer	67	NA	NA
Law firm	42	NA	NA

fathers (see Table 7). Studies also link higher absence rates to difficulties in finding child care.

Breakdowns in the System

Child care breakdowns are likely to occur when the care is of poor quality or when the arrangement relies on one caregiver (as in family day care or in-home care) who has been incapacitated. The number of arrangements that parents use to cover their work hours, the form of the care and the quality of the care all influence the reliability of the child care service. Parents often use several arrangements to cover their varying needs. Based on several corporate surveys, the average number of arrangements that parents make is consistently reported at about 1.7.

Of the 2,300 employed mothers studied in the National Child Care Survey, 15 percent reported some lost time from work, and 6 percent reported lost days from work during the past month because of child care breakdowns. These women were out of work an average of 1.58 times during the last month (where one time may represent several days missed from work). This figure may be inflated since interviews were held during the winter months when "snow days" are a problem for working parents.

The *Fortune* survey found that a third of the parents who experienced child care breakdowns were nervous or stressed often or very often, as compared to 17 percent of those who do not have trouble maintaining their child care arrangements.

The Affordability of Care

The inability to pay for quality care can result in problems at work. Emlen concluded in his 33-company study in Oregon: "Employees with child care affordability problems have less money and are frustrated in their expectations. They are willing to pay more for child care, but what they are looking for is harder to find, and they end up less satisfied with what they do find."

In national samples, child care expenses account for 10 percent of family income, or about 25 percent of the mother's wages (see Chart 8). Shinn reports that in actual dollars, two-paycheck families paid the most for child care, but after controlling for family income and other demographic factors, single mothers paid a larger share.

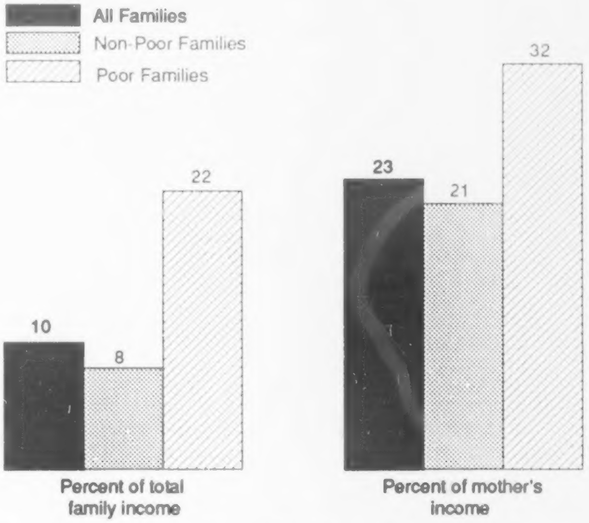
Affordability is a serious problem for lower-income families who pay as much as 25 percent of their family incomes on child care. Yet one study found that few parents would select alternative arrangements because of cost. In a 1988 national survey by *USA Today*, 50 percent of those wanting to change their arrangements mentioned reasons of quality, compared to 19 percent for convenience, and only 3 percent for cost. Hofferth draws the following conclusion: "Cost is not the biggest source of stress for parents; rather quality issues are very high on the list."

Elder Care

As with child care, the problems associated with elder care are largely the result of inadequacies in the social services available in the community. The complexity and duration of caregiving often increase stress

Chart 8

Average Weekly Expenditures on Child Care as a Percent of Income



Source: Hofferth, S. "The Current Child Care Debate in Contest," Bethesda, MD; National Institute of Child Health and Development, May, 1988.

Table 8: Prevalence of Elder Caregiving

	Percent of Employees with Some Responsibility
Company A (insurance)	12%
Company B (military contractor)	25
Company C (insurance)	20
Company D (insurance)	34
3-company study (Bridgeport, CT)	25
Company E (computer)	30
Company F (20 hospitals)	22*
	with Major Responsibility
Company G (law firm)	8%
Company H (pharmaceutical)	7
Company I (pharmaceutical)	5
Company J (financial planning)	6
Company K (pharmaceutical/ home care products)	8
Company L (apparel manufacturer)	8

*Range among 20 hospitals was 11-33 percent.

levels, absenteeism, and quit rates beyond those caused by child care.

Contrary to popular belief, children have not abandoned the elderly: Only five percent of the population over 65 are in nursing homes, and 75 percent of senior citizens live with or near their families. According to the National Council on the Aging, approximately 6.6 million dependent elders, who may or may not be disabled, are over age 65 and have some need for assistance from others. This number will reach 9 million by the end of the century. As the baby boomers become elderly, 19 million people will become dependent by the year 2040.[66] More employees will have dependent elders in the 21st century than dependent children. Employees may also have more parents (including in-laws) than children.

Between 10 and 34 percent of any given employee group has some responsibility for an aging relative. "Major" caregiving is provided by less than 8 percent of workers (see Table 8). Many employees who have elder care responsibilities care for more than one adult. In the national sample surveyed by the American Association of Retired Persons and Opinion Research Corporation (AARP-ORC), 25 percent of caregivers were responsible for more than one adult dependent. The Travelers Companies found that 19 percent of caregivers were providing care for more than one person. At the Sisters of Providence hospitals in the Northwest, one-third of employees reported caring for more than one adult.

The responsibilities that caregivers assume while working range from daily transportation to looking for a nursing home (see Table 9). Employees spend about 12 hours per week providing this care. At The Travelers—and at many other companies—women are more likely to be the primary caregivers, spending 16 hours per

Table 9: Types of Elder Care Responsibilities

Percent of employees reporting elder care support provided, by type.

	University of Bridgeport	*AARP*	*Travelers*	*33-company, Oregon*	*Caregivers of Frail Elderly*
Transportation	74%	79%	62%		
Arranging appointments	64		36	7%	
Providing meals	66	68			
Grocery shopping		82			86%
Visiting/phone	54		76	73	
Home maintenance	54	75	57		81
Personal care	30		15	32	67
Administering medicine		45			53
Managing finances		65	44	10	49
Filling out forms	62				
Searching for new residence	10				
Providing money	63		30		

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[66] Michael Creedon, (ed.) *Issues for an Aging America: Employees and Elder Care*, University of Bridgeport: Center for the Study of Aging, 1986.

Table 10: Hours of Elder Caregiving Provided

	Average Number of Hours per Week per Employee
AARP	10
Travelers	10.2
Travelers (Buffalo)	8.5
Pharmaceutical	15
Computer firm	16
Family Survival Project	35*

* Refers to brain-injured elders, and includes some caregivers who are not employed.

week performing these duties, whereas men reported an average of 5.3 hours (see Table 10).

Available Services

According to the National Council on the Aging, about 2,100 adult day care centers were in operation in 1989. Inadequate funding has slowed their growth. Few private medical insurance companies cover the cost of adult day care centers, which can run $12 to $50 a day. Medicaid is available to families for health-oriented facilities that meet state requirements, but only when the elderly person is in a formal institution and is poor. Medicare does not cover nursing-home care (except convalescent care in a skilled facility following a hospitalization), long-term care, private-duty nursing, or prescriptions needed after hospital treatments. Recent efforts to offer long-term care insurance to employees and their dependents often require prior hospitalization. Companies typically require employees to pay the full premium.[67]

Ongoing costs of providing elder care do not appear onerous, unless a long-term illness is involved. In the national AARP-ORC sample, full-time employees assume average monthly caregiving costs of $107. Previously employed caregivers and those who never worked pay more. Those with lower household incomes pay a higher percentage of their incomes on expenses related to caregiving. Fewer than 10 percent of the AARP-ORC respondents report hiring someone to provide respite care or in-home nursing support.

Respite care is an important dimension of elder care. Most company studies show that employees have been providing care for an average of five years. In the AARP-ORC survey, 28 percent had been unable to take a vacation in 2 years. At The Travelers, 18 percent of the caregivers had not had a vacation from caregiving for more than 2 years, and another 10 percent had not been away in the past year.

Having the relative live in another city or state from the employed caregiver is a frequent complication of caring for the elderly. In a 5-company study by AARP, 35 percent of caregivers had some responsibility for relatives living more than 100 miles away. At the Sisters of Providence hospitals, 22 percent of caregivers lived over 100 miles from their elderly relatives, and 27 percent of Travelers' caregivers had relatives living more than 50 miles away. As many employees using the nationwide elder care referral services sponsored by Work/Family Elder Directions are as likely to have relatives living close by as ones who are 100 or more miles away. Employees who must negotiate complicated arrangements from a distance are less able to respond immediately to emergencies. These employees report significantly higher stress and costs associated with purchasing care than employees whose relatives live nearby.

Caregiver Profile

The AARP-ORC study found that caregivers working full time are typically college-educated men from more affluent households. As a rule, they assume a secondary rather than a primary caregiving role because they are more likely to care for a "healthier" family member who is living independently. Nonworking caregivers, on the other hand, tend to have more demanding caregiving roles.

The effects of elder care on work performance depend, in part, on the severity of the elder's affliction. In the Family Survival Project study of 284 primary caregivers of brain-impaired relatives, half were employed and half were not. As in the AARP-ORC study, employed caregivers were younger and more affluent. They had paid help for 16 more hours per week, but spent 35 hours per week in their caregiving role. They also cared for relatives who were younger by nearly six years.

In The Travelers' survey, a major illness or injury most frequently precipitated the need for care of the elderly person. Hospitalization and death of a spouse were the next most common events leading to a caregiving role. Being laid off or fired from a job was the reason in 3 percent of the cases. About one-third of The Travelers' caregivers had problems with vision, swollen legs, hearing impairments, arthritis, depression, hypertension, and memory loss. Very few had serious diseases such as cancer, Parkinson's disease, stroke, or diabetes.

Little is known about what determines the dimensions of the employed caregiver's role. The cost of institutionalization, when compared with the salary of the caregiver, is undoubtedly a factor in the decision. The flexibility of the job, the value of the work, and the level of stress experienced by the individual employee are additional considerations. Without this information, the retention effects of certain elder care programs remain speculative.

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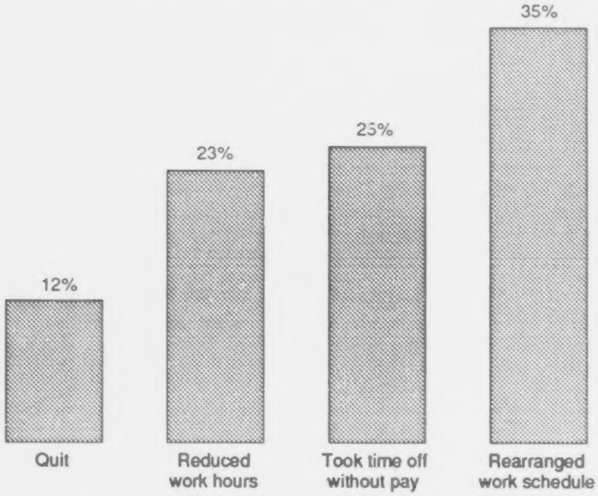
[67] Dana E. Friedman, "Elder Care: The Employee Benefit of the 1990's?" *Across the Board*, June 1986, pp. 45-51.

Chart 9

The Impact of Elder Care on Women Workers

Percent of all working women with elder care responsibilities who:



Source: Robyn Stone, Gail Lee Cafferata, and Judith Sangl, *Caregivers of the Frail Elderly: A National Profile,* National Centers for Health Services Research and Health Care Technology Assessment, Department of Health and Human Services, Washington, D.C., 1982.

Stress and Productivity

Effects on work performance are due primarily to the degree of stress associated with combining work and caregiving, the sensitivity of the supervisor, and the flexibility in work schedules. The adequacy of the support services available to the employee may be a factor as well. One survey found 55 percent of caregivers reporting difficulty in finding elder care services, while 67 percent of caregivers in another survey were frustrated in their search for elder care. More than one-third reported difficulty providing care or difficulty knowing where to turn for help. These problems lead to time at work on the phone which 64 percent of managers in the New York Business Group on Health (NYBGH) survey observed to be a problem. About 57 percent of the caregivers in the Buffalo study concurred.

On an average, 45 percent of caregivers report working less effectively due to worry about their elder care responsibilities. In a Wall Street law firm, 48 percent of caregivers felt their elder care responsibilities distracted them and negatively affected their productivity. The Buffalo office of The Travelers found that 28 percent of caregivers reported low morale due to caregiving.

Caregivers who quit their jobs to give care, and employees with less than half-time jobs, experience the highest levels of stress in the Family Survival Project survey. The study concludes: "These caregivers seem to have lost the respite from caregiving that outside employment can provide, and tend to be in onerous caregiving roles." Caregivers who work a 40-hour week also experience high levels of stress when economic limitations prohibit obtaining adequate paid caregiving help. In the NYBGH survey of 68 company managers, almost three-fifths reported observing an increase in stress due to elder care responsibilities among employees.[68]

A two-year study at the University of Michigan School of Nursing found that caregivers are three times more likely than the elderly relatives they care for to report symptoms of depression and four times more likely to report anger.[69] Studies at Duke University's Center on Aging found that 33 percent of persons caring for relatives with Alzheimer's disease use prescription drugs for depression, tension and sleep disorders. The comparable figure in the general population is 10 percent. Furthermore, 22 percent of the caregivers use alcohol daily to sleep or relax.[70]

The AARP-ORC study found that time spent on caregiving may create stress by leaving less time for leisure activities, as 51 percent reported. One-third spent less time with other family members (34 percent) or neglected their own health (33 percent).

Absenteeism and Availability for Work

Managers believe that employees reduce their work hours more than reported to care for an elderly relative. In two studies, fewer than 5 percent of caregivers admitted to reducing their hours. However, in the two studies of managers by Retirement Advisors and the New York Business Group on Health, 32 percent and 46 percent respectively, perceived employees to be cutting back on hours worked.[71]

The National Long Term Care study found that 29 percent of all caregivers (35 percent of women) had rearranged their schedules to accommodate elder care demands. Again, a discrepancy exits between employee and manager reports of schedule modifications. Between 9 and 19 percent of employees report taking unscheduled days off for caregiving. Yet, between 41 and 75 percent of managers thought that employees were taking off such time (see Chart 9 above and Table 11 on page 34).

In the AARP-ORC study, 33 percent of employees reported coming in late or leaving early due to elder care responsibilities. In the 33-company study in Oregon,

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[68] Leon J. Warshaw and staff, *Employer Support for Employee Caregivers*, New York: New York Business Group on Health, 1986.

[69] Friedman, op cit.

[70] Friedman, op cit.

[71] Warshaw, op cit; and *Elder Care in the Workplace: Corporate Employee and Retirement Implications*, Retirement Advisors, New York: 1986.

Table 11: Effects of Elder Care Responsibilities

	Caregivers									*Managers*	
	AARP-ORC[1]	***Oregon 33-company***[2]			***Sisters of Providence***[3]	***Elderlink***[4]	***Travelers***[5] ***Buffalo***	***Caregivers of Frail Elderly***[6]	***Family Survival Project***[7]	***Retirement Advisors***[8]	***NYBGH***[9]
		All	*Men*	*Women*	*Women*	*Women*					
Reduced hours	4	3	2	4				21		32	46
Rearranged schedule								29			
Come in late/ leave early	33									45	73
Unscheduled days off	9							19		41	75
Delayed retirement										30	
Quit/considered quitting						23		9	22		
Work less effectively due to stress		31	22	38	37	34	30		58	57	60
Low morale										28	17
Excessive phone calls										57	64
Conflict between work and family		28				77	85				
Difficulty finding care		55	48	61	67						
Difficulty providing care		36	31	41	41						
Don't know where to go for help		41	39	44	42						

[1] American Association of Retired Persons (AARP), *A National Survey of Caregivers: Final Report*, Washington, D.C.: AARP, 1988.

[2] *Employee Profiles: 1987 Dependent Care Survey, Selected Companies*, Oregon: Regional Research Institute for Human Services, Portland State University, 1987.

[3] Arthur C. Emlen, Paul E. Koren, and Dianne Louise, *1987 Dependent Care Survey: Sisters of Providence, Final Report*, Oregon: Regional Research Institute for Human Services, Portland State University, 1987.

[4] G. Borison, *Elderlink: The Corporate Program at Somerville-Cambridge Elder Services: A Link Between the Community and the Private Sector. A Final Report.* Somerville, Massachusetts: Somerville-Cambridge Elder Services, 1985.

[5] Gary D. Brice, David Carstense, and Marlen Kwiatkowski, *A Profile of the Travelers Insurance Company, Buffalo Office, Employee Caregivers to Older Adults*, University of Buffalo School of Social Work, 1987.

[6] Robyn Stone, Gail Lee Caffetata, Judith Sangl, *Caregivers of the Frail Elderly, A National Profile*. Washington, D.C.: U.S. Department of Health and Human Services, 1986.

[7] Robert B. Enright and Lynn R. Friss, *Employed Caregivers of Brain-Impaired Adults: An Assessment of the Dual Roles*, San Francisco, California: Family Survival Project, 1986.

[8] *Elder Care in the Workplace: Corporate Employee and Retirement Implications*, Retirement Advisors, New York: 1986.

[9] Leon J. Warshaw and staff, *Employer Support for Employee Caregivers*, New York: New York Business Group on Health, 1986.

caregivers were late 14.4 times per year (19 times for women and 10 times for men). Managers generally perceived these absences to be more frequent.

Among 4 surveys of employed caregivers, the average number of days missed due to elder care concerns was 7.5 per year (see Table 12). About 43 percent of the managers in the Retirement Advisors study and 67 percent in the NYBGH survey had observed increased absences among employees due to elder care.

Turnover

Extensive elder care responsibilities may lead employees to quit their jobs. Among the caregivers interviewed in the AARP-ORC study who were formerly employed, 15 percent chose early retirement and 12 percent gave up work entirely as a result of caregiving. In the Long-Term Care survey, 29 percent had considered quitting, while 9 percent of all caregivers (12 percent of women) actually quit. The figure was 12 percent for daughters of aging parents. A study at the Philadelphia Geriatric Center found a 12-percent quit rate among elder caregivers. In the Elderlink study, about 23 percent of female caregivers at Wang Laboratories had considered quitting because of elder care demands, while 22 percent of full-time working women in the Sisters of Providence hospital network did leave their jobs to care for a family member.

Table 12: Absenteeism Due to Elder Care

Study	*Average Number of Days Absent per Employee*	*Percent of Employees Absent*
33-company, Oregon	7.63	24%
Family Survival Project 9.3 hrs. per month	14	55
Computer (5 times per year; 35 hours per year)	4	
High technology	2.2	
Computer	.3	
Travelers (Buffalo)	4.5	50
Retirement advisors (percent of managers observing increased absence)		43
New York Business Group on Health		67

Work and Family In a Benefits Context

In evaluating programs, important insights can be gained by examining management theories about the purpose of benefits and their perceived capacity to improve productivity and performance.

As employee benefits costs escalate, employers are increasingly questioning their value in the compensation package. According to the U.S. Chamber of Commerce, the average cost of benefits in 1987 reached $10,708 per employee, or 39 percent of payroll.[72] The Council on Employee Benefits predicted that percent could rise to 56 percent of payroll by the year 2000.[73]

Fringe benefits, particularly those that require employees to build up seniority in order to be eligible for them, are generally adopted to keep or attract labor—in other words, for the purpose of increasing productivity by reducing turnover costs. Some benefits specialists contend that morale and loyalty is improved by the voluntary provision of fringe benefits. Other experts disagree with this original intent of benefits or with the idea that such productivity enhancements through benefit provision are possible today. At a 1989 meeting of The Conference Board's Work and Family Research Council, Gary Pines, principal of TPF&C, a benefits consulting firm, commented that benefits provide short-term protection and long-term security. In his view, benefits do not tend to motivate employees to improve their productivity.

Motivators or Satisfiers?

Classic management theories suggest the presence of *motivators*, job characteristics that cause people to work harder, and *satisfiers*, which make the job more agreeable. While motivators appear more closely related to productivity, satisfiers are important for retention, but do not necessarily make people perform better.

According to the theories developed by Fredrick Herzberg in the 1950s—on whose work modern assumptions are based—motivators typically involve elements that are intrinsic to the job, such as "a good chance for advancement," "a great deal of responsibility," and "a say in important decisions." Satisfiers include good benefits and working conditions, and flexible hours.[74] Herzberg assumed that these latter conditions are important to workers, but will not motivate them to be more productive. Yet Herzberg found that benefits had the ability to make people feel dissatisfied and perform poorly. Inadequate satisfiers can reduce productivity; but even at an optimum level, they cannot increase productivity. He concludes: "The opposite of job satisfaction is not dissatisfaction and similarly, the opposite of job dissatisfaction is not satisfaction, but no job dissatisfaction."

In a 1987 survey of 183 employees in a Midwest health facility, 82 percent of the respondents viewed fringe benefits as important, and 65 percent said that benefits influenced their decision to stay with the organization. Only 18 percent believed that the benefits helped recruit them to the organization. The study also found, to the surprise of the authors, that benefits were perceived as a strong motivating influence on employees.[75] Retention, however, was thought to be most affected, confirming Herzberg's theory that satisfiers help keep people, but casting doubt on the assumption that they are not capable of motivating them.

According to Herzberg's theory, company provision of family-supportive benefits will maintain, but not increase, productivity by preventing productivity loss. This theory, though plausible, is untested among today's workers—baby boomers with different values from those of prior generations, and more women, whose needs and expectations differ as well. For instance, the employer-employee contract is less viable; employees are more committed to their careers than to a particular firm; people want more leisure time and seem willing to make sacrifices to achieve a better quality of life. These and other profound changes in the value orientation of today's workers justify skepticism for theories developed about yesterday's workers.

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[72] *Pension Reporter*, (December 19, 1988), Washington, D.C.: Bureau of National Affairs, p. 2167.

[73] Fred K. Foulkes, (Ed.), *Employee Benefits Handbook*, Boston: Warren Gorham and Lamont, 1987, p. 6.

[74] Fredrick Herzberg, "One More Time: How do you Motivate Employees," *Harvard Business Review*, January-February, 1968, pp. 53-62.

[75] Thomas J. Bergmann and Marilyn A. Bergmann, "How Important are Fringe Benefits to Employees?," *Personnel*, December, 1987, pp. 59-64.

New Values

In tracing the nation's collective psyche over the past 30 years, Florence Skelly, a recognized pollster formerly associated with Daniel Yankelovich, describes the 1950s as a period of upward mobility, puritan tradition and self-denial—denial of the individual in favor of conformity and denial of current desires for the future. The 1960s brought in the era of self-fulfillment and self-discovery. Economic realism, a revived commitment to the free enterprise system, a shift from government to business as an agent of social change, more interest in the future as the baby boomers grew older, and respect for pluralism, all characterize the decade of the 1980s. Skelly predicts: "If this notion of commitment to increased profits starts to become a predominant force, if the erosion of the egalitarian spirit continues, and if there is more fear in the contract employers make with their workers, I think the definition of benefits will be less clear. Rather, benefits will increasingly be used as incentives for performance. This is a very different kind of use than we have traditionally seen."[76]

These psychological changes have important implications for the eventual provision of family-supportive benefits and employee responses to those benefits. For instance, if employers can recognize and accept diversity within the employee population, companies are then free to acknowledge the different needs among workers and respond accordingly. The company culture, managers, and employees are learning that equity has a new meaning.

Benefits were primarily intended to support catastrophic events, rather than the day-to-day drudgeries of life. Corporations have been generous in their efforts to protect employees from future and immediate disaster. But they are slow to understand the value of benefits in reducing daily tensions and ongoing personal problems.

Employee Expectations

The ability for employee benefits to yield a return depends on whether the program or policy is well designed and implemented and has adequate financial backing; whether it has been properly communicated so that employees know how to use it; and whether there is a commitment to the program throughout management ranks. For instance, an on-site day care center that one supervisor thinks is a waste of money may not yield the maximum return on investment for the employees reporting to that supervisor. Paternity leaves with perceived negative sanctions will never be taken.

Perhaps the most important factor in the effectiveness of company-provided benefits is whether they are expected, desired or needed by employees. Given the demographic changes and the work-family conflicts outlined earlier, some justification has been presented for company support. And based on several national polls that document rising expectations, employers are under pressure to respond to employees' child care needs (see Table 13). More companies are becoming concerned about employee dissatisfaction if these expectations are not met.

The New Demand

Since work-family issues first surfaced about a decade ago, employees have remained reluctant to express their family-related concerns at work. But increased corporate support to families, media coverage on the issue, and the labor shortage that makes it an employees' market, have encouraged employees to begin to speak up. Sensing this growing expectation and the desire to better understand the needs of today's workers, companies are adding questions to attitude surveys and environmental scans in order to find out what employees want. Focus groups and specialized needs assessments are conducted to gather more information about the needs of employees and their families.

In a review of eight company needs assessments where employees were asked to rank the company programs that would be most beneficial to them, the responses show an overwhelming preference for increased flexibility in work hours. Employees in six of the eight firms cited flexible work arrangements as a top priority. A revision of sick time policy was the second most frequently requested change, mentioned by five of the employee groups, twice as a top priority. Employees were specifically interested in being allowed to take time off for a sick family member. At one firm, flexible work hours were considered the most important option by the entire employee population. But when the question was asked only of working parents, revisions in sick leave prevailed.

The on- or near-site child care center was the third preference, followed by training supervisors to become more sensitive to family issues and half-day vacations. It is interesting to note that child care centers, despite extensive publicity about this very tangible benefit (and

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[76] *America in Transition: Implications for Employee Benefits*, Employee Benefits Research Institute, Washington, D.C., 1982, p. 75.

Table 13: Expectations of Employer Support for Child Care (Based on Public Opinion Polls)

The Star-Ledger/Eagleton Poll
January 29 - February 8, 1988
800 adults, New Jersey sample

"Some people feel that employers should help provide child care for their employees because they benefit from having working parents in the labor force. Others think the responsibility for child care is the parents' alone. Do you think employers should or should not help provide child care?"

Employers should provide	67%
Should not	26
Depends/Don't know	7

Fortune Magazine
June, 1987

"Would you like companies to provide a subsidized child care center?"

	Men	*Women*
Yes	38%	54%
No	62	46

Fingerhut/Granados/Service Employees
International Union
May, 1987
724 registered voters, national sample

"I think employers should bear at least some of the cost of child care programs."

Agree a lot	35%
Agree a little	25
Disagree a little	14
Disagree a lot	23
Don't know	4

"Working parents are more productive at work when they know their children have good child care arrangements."

Agree a lot	85%
Agree a little	11
Disagree a little	-
Disagree a lot	-
Don't know	2

Yankelovich Clancy Shulman/*Time* Magazine
September, 1986
1,014 adults, national sample

"Do you think it should be a policy of business to provide day care facilities for the children of employees?"

	Total	*Men*	*Women*
Yes	51%	46%	56%
No	39	46	34
Depends	7		
Not sure	3		

Roper Organization
October - November, 1985
1,998 adults, national sample

"Tell me whether it should be the responsibility of business to provide or pay part of the cost of day care for child care of employees who are mothers."

Definite responsibility	9%
Highly desirable	24
Nice but not expected	40
Beyond what they should do	25
Don't know	

employee visions of free, high quality child care), were not ranked highest. The preference instead was for flexible hours and sick leave, which are considered to be relatively low-cost benefits. One explanation from The Conference Board's Work and Family Research Council is that flexibility may be harder to create in some corporate environments than building a child care center.

Specific Work-Family Programs

Research on specific work-family programs and their ability to reduce the negative effects of work-family conflict is limited. Sufficient research exists, however, on child care programs, flextime, employee assistance plans, and parental leave policies to gauge some of their impact. How effective one initiative is over another in addressing specific problems, or what cumulative effect might occur when several initiatives are provided simultaneously is not known, due largely to the lack of research evaluating initiatives implemented by various employers.

Employer-Sponsored Child Care Centers

Of all the ways for companies to address the needs of working parents, the on- or near-site child care center has received the most attention. A center involves a significant commitment of funds and resources. It is the most tangible option—easiest for nonparent decision makers to grasp; easiest for newspapers to photograph; but apparently not easy to study. Very few studies evaluate employer-sponsored centers, and none compares company-owned centers to those contracted out. Very few analyses are pure in their methods and realistic in their conclusions. The strong consistency of the findings, however, lends weight to their credibility. Based on the most relevant data available, a child care center sponsored by an employer can affect the bottom line—not as much as expected, and not in the ways managers predict—but with a certain payback. Research suggests that reduced turnover and improved recruitment may be the most positive benefits of work-site child care centers.

Of the 16 studies[77] reviewed (see box on page 41), six are experimental in nature, comparing the center users with a "control group" of employees who did not use the center. Control groups include users of other child care services, nonparents, or employees of a similar company without a child care center. The matching of samples is important to make sure that other differences between groups—besides the use of the center—are responsible for the variation in outcomes. In some cases, these groups were surveyed up to a year before the center opened and

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[77] D.N. Krug, V.E. Palmour, and M.C. Ballassai (1972), *Office of Economic Opportunity Child Development Center*, Westat, Inc., Rockville, Maryland.

G.T. Milkovich and L.R. Gomez, "Day Care and Selected Work Behaviors." *Academy of Management Journal*, 1976 (1) pp. 111-115.

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Sandra L. Burud, Pamela R. Aschbacher, Jacquelyn McCroskey (1984a), *Employer-Supported Child Care: Investing in Human Resources*, Auburn House Publishing Company: Boston, MA.

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Stewart A. Youngblood and Kimberly Chambers-Cook (1984), "Child care assistance can improve employee attitudes and behavior," *Personnel Administrator*, February, 1984, pp. 45-95.

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Florida Department of Administration (1987), *Florida Child Care Pilot Project*, (final report to the Florida Legislature): Tallahassee, Florida.

Ann Gilman Dawson, Cynthia Sirk Mikel, Cheryl S. Lorenz, and Joel King, *An Experimental Study of Effects of Employer-Sponsored Child Care Services on Selected Employee Behaviors*, Chicago: Foundation for Human Services, Inc., August 6, 1984.

Jules M. Marquart (1988), *A Pattern Matching Approach to Link Program Theory and Evaluation Data: The Case of Employer-Sponsored Care*, Cornell University, (Dissertation): Ithaca, NY.

Cynthia Ransom, Pamela Aschbacher, and Sandra Burud (1988), *The return on an investment in child care benefits—is it real? The Union Bank Story*, unpublished manuscript: Pasadena, California, and *Productivity impact study conducted for Union Bank Child Care Center*, unpublished report: Pasadena, California.

D.L. Burge and D.L. Stewart (1988), *The Dominion Bank Story*, Virginia Tech University: Roanoke, Virginia.

Studies of Employer-Supported Child Care

Research Site	*Research/Cite*	*Sample*	*Research Design*
Federal OEO- Washington, D.C.	Krug, et al (1972)	50 parents from center 50 in control group	Pre-post test of users compared to control group
Control Data Consort. Minneapolis, MN	Milkovich & Gomez (1976)	30 center users 30 parent non-users 30 non-parent	Post-test of center users compared to 2 control groups
Multiple Companies–National with child care	Perry (1978)	58 employers, most with on-site centers	Survey of manager perceptions
State of New York Children's Place–Albany, NY	WRI (1980)	88 users of center 1 year after opening	Post survey of user (66% response)
Statewide Survey of Employers–Minnesota	AAUW (1982)	563 firms with and without child care	Survey of manager perceptions in 200 randomly selected companies and selected interviews
Multiple Companies–National with child care	Magid (1983)	204 employers with child care programs, mostly on-site	Survey of manager perceptions
Multiple Companies–National with child care	Burud, et al (1984)	178 employers, most with on-site centers	Survey of manager perceptions
Methodist Hospital	Burud (1984)	123 users of center	Post survey of user perceptions (71% response)
North Carolina, Textile Firm	Youngblood, et al (1984)	410 people in co. with center; 3 divisions of another co. with no center	Comparisons of employees in firm with center and those in firm without
Statewide Survey of Employers–NY	Governor's Comm. on Child Care (1986)	1041 firms with and without child care	Survey of manager perceptions in 10,558
Kid's Play, State of Wisconsin Pilot Day Care Center	State (1987)	56 users; 35 supervisors of center users	User perceptions survey before enrollment, 5 months after opening and 17 months after. Manager perceptions also surveyed
Ina S. Thompson Child Care Center State of Florida	Department of Administration (1987)	37-62 users; 42 supervisors of center users	User perceptions surveyed 9 months after opening and interviewed 1 year later. Interviews with managers
Multiple Companies–National	Dawson, et al (1988)	311 employees in 29 companies with various child care programs	Post-test of employees using company-sponsored child care programs
Catherine McAuley Health Center	Marquart (1988)	86 parents using hospital-based child care center or family day care program; matched to group of other child care users	Pre-post test of hospital center users compared with hospital-sponsored family day care centers and parents using other child care
Union Bank– Los Angeles, CA	Burud, et al (1988)	87 users 1 year before center opened and 1 year later	Pre-post test of users compared to control group, parents on waiting list and other bank employees
Dominion Bank Roanoke, Virginia	Burge & Stewart (1988)	400 randomly selected employees	Post-survey of all employees and users

up to two years after. This comparison is critical for establishing causality, a consistent flaw in many analyses. Without a before and after test of groups, no evidence can be provided that the differences found between users and nonusers did not exist before the center opened.

Six of the studies are evaluations conducted for sponsoring employers. Five are based on employee perceptions of effects after using the center for at least five months.

Early Skeptics

A flurry of child care centers sponsored by employers opened in the early 1970s. The first experimental study was conducted in 1972 at the day care center sponsored by the federal Office of Economic Opportunity (OEO) in Washington, D.C. The evaluators concluded: "There is no evidence that OEO users of the CDC (Child Development Center) are absent or tardy less in 1972 than in 1971 before the CDC was in operation."

Milkovich and Gomez conducted the next experimental study at the 120-child center created by Control Data Corporation and 12 other Minneapolis employers. A random sample of 30 mothers with children in the center were compared to a matched sample of 30 mothers whose children were in other forms of care, and to a sample of 30 other employees (80 percent female) who were not parents or whose children were grown. Because very little is known about the kind of child care used by those not enrolled in the company-sponsored center, or why those parents did not use the center, it is difficult to ascertain if the reduced absenteeism and turnover rates found were caused by the company-sponsored child care center.

In 1980, a child care center was created in the factory of a North Carolina textile firm employing 95 people. The work performance of employees in this company was compared to another nonunion textile firm nearby. This firm had 1,000 employees and no child care center. The comparison group was described as needing improvement in morale, absenteeism, and turnover. These differences favored the company sponsoring the center, especially since comparisons were made with the entire employee population, and not specifically users of the center. As a result, the evaluators claimed that the center improved attitudes and work behavior, but admitted that "causality cannot be ascertained with certainty."

In a review of all these centers, the U.S. General Accounting Office observes: "None of these studies, nor any other research that came to our attention in this review, adequately established, in our opinion, a causal relationship between providing child care services and cited benefits to the employer."[78] *Personnel Psychology* concludes: "Despite enthusiasm by some chief executive officers, public relations officials, and child care advocates, assertions that employer-sponsored child care reduces workers' absenteeism or tardiness, or that it increases workers' productivity or job satisfaction, are not supported by credible research."[79]

Newer Research

More recent studies attempt to correct some of the flaws in earlier research. The Union Bank Child Care Center in Los Angeles, providing care to 60 employees' children age 6 weeks to 5 years, was evaluated 1 year before and 1 year after it opened in January 1987. The employees who used the center were compared with three groups; employees using other forms of child care, employees who were on the waiting list for the center, and other Union Bank employees in the area. The results, based on personnel records and employee reports, indicate that the child care center had a positive effect on turnover, absenteeism, maternity leave, and public relations. The relationship to tardiness, morale and recruitment was less clear.

The turnover rate for the bank as a whole was 18 percent. For parents not using the center, 9.5 percent of employees left the bank compared to 2.2 percent for center users. None of the center users quit to stay home with their children while 11 nonusers did.

The center is also credited with reducing the length of maternity leave. Users of the center were out 1.2 weeks less than mothers who used other forms of child care. However, once the infant program was filled, mothers did not have that advantage. It seems that the size of the infant program determines the overall impact on maternity leaves.

One year after the center opened, employees using the center were found to be absent 1.7 days less per year than other parents with children in child care. However, the absenteeism rate for center users did not drop from before enrollment in the center. The authors point out that at least the absence rate did not increase, as it did for nonusers. The authors of the study contend that children have the highest incidence of illness during the first year they are in group care. They concluded: "Absenteeism would be expected to drop during the second and subsequent years of the program's operation."

Half of the supervisors of employees using the center believed morale had improved among center users. The other half felt that morale was already high. Some supervisors reported improved morale among co-workers of center users, and 60 percent of them reported that their own morale was improved. One co-worker commented,

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[78] U.S. Government Accounting Office, *Parental Leave: Estimated Costs of Human Resources, 925, The Family and Medical Leave Act of 1987*, Washington, D.C.: GAO/HRD 88-34, November, 1987, p. 13

[79] Thomas I. Miller, "The effects of employer-sponsored child care on employee absenteeism, turnover, productivity, recruitment or job satisfaction: What is claimed and what is known." *Personnel Psychology*, 37, pp. 277-289.

Union Bank Child Care Center
1987 Cost Savings*

Turnover	$63,000–$157,000[1]
Absenteeism	$35,000[2]
Public relations	$40,000[3]
Total Cost Savings	**$138,000–$232,000[4]**

* Does not include savings from reduced recruitment cost, improved morale, reduced tardiness and reduced tax expense.

[1] The 2.2 percent rate of turnover for center users compared to the 9.5 percent rate for those using other forms of child care translates into "at least 6.3 employees retained due to the availablility of the center." Based on 1980 figures from the Merchants and Manufacturers Association calculating the turnover costs for exempt office and technical workers in Southern California firms, Union Bank reduced turnover costs by $63,000 in the first year. If the 18 percent turnover rate for all Union Bank employees had been used, cost savings would equal $157,000.

[2] This cost was calculated as the average daily salary based on the weighted average monthly salaries and benefits by grade level, and assumes that only 20 percent of the absences require a replacement worker at the same cost.

[3] Dollar figures for the 27 newspaper and magazine articles, two TV and one radio spot, were calculated by an independent advertising firm based on a cost of equivalent advertising.

[4] In addition to the savings above, with a new state tax credit that went into effect the year after this study, the Union Bank is eligible to claim a $600 tax credit for each full-time child in the child care center, or a total of $36,000 in tax savings per year until 1992.

"I would have to do her job if she were tardy or absent, so it's been good for me."

Burud & Associates, who conducted the study for Union Bank, concluded that it was able to recover its annual subsidy of $105,000 (more than 40 percent of the center's operating budget). They estimated that within five years the Bank would fully recover its $430,000 in start-up costs (see box above).

In 1984, a study was made of the child care center at the Catherine McAuley Health Center (CMHC) in Ann Arbor, Michigan. The health center, the most successful Midwest institution in the Sisters of Mercy Health Corporation chain, instituted a variety of quality of work-life programs, including the day care center that opened in 1983 for 110 children at a cost of $1 million. The health center also offered a "cluster care program" that screens family day care providers and places them on a referral list made available to CMHC employees. This program was intended to offer greater flexibility to the employees working night shifts, rotating shifts or week-ends, and to those who would not get into the center or preferred a more home-like environment for their children.

The study compared the center users with the cluster care users. Center users were also compared with other parents of preschoolers and school-age children not using the CMHC programs. The groups were generally well-educated, well-paid, technical and professional employees in their thirties. Center users were the best educated of the groups, most likely to have an employed spouse, and had the highest family income. The evaluator did not believe these differences directly affected the variables being measured.

The study found that center users had a higher level of satisfaction with their child care arrangements, but they also had more work-related problems caused by their child care arrangement than did cluster program users or other nonusers. These problems did not occur frequently and were most often related to the need to stay late or leave early. Center users also experienced greater stress related to child care, and more problems when the child was sick. Nonuser parents relying on in-home care had significantly fewer work-related problems caused by their arrangement than family day care users.

Facility users said the child care program influenced their decision to accept and to continue employment at CMHC more than the other groups. Continuing employment was the major effect of the study. Turnover was measured in two ways: (1) the employee's intention to continue employment at the company, and (2) the employee's actual retention or departure from the company. Program users were significantly higher than the nonusers in their intention to continue employment because of the child care center, but there were no significant differences between groups in the actual turnover rates. The users were also more likely to recommend CMHC as an employer.

No significant differences were found in job satisfaction, organizational commitment, or in the stress associated with balancing work and family life. There were differences, although not statistically different, in absenteeism and in turnover rates. Center users had the highest absenteeism in the year before the program began. They experienced a decrease in absenteeism each year of the program, while nonuser rates remained the same all three years. User absences decreased by about one day during the first year of the program and by an additional half-day the second year. Cluster program users did not show a decrease in absences during the first year, but in the second year, absences decreased by three days, possibly due to the slow start-up of the program. According to the findings: "Although these differences were not statistically significant, the reduced absenteeism rate represents considerable savings that may be of practical significance to the organization if cost analyses are taken into account."

A comparison of employers with and without on-site centers was conducted by Arthur Emlen of Portland State University for the 20 hospitals in the Sisters of Providence network. Of the two locations sponsoring on-site centers for employees—Providence Hospital in Anchorage (Alaska) and Providence Medical Center in Seattle—only the Anchorage hospital was in full operation. Employees in this hospital were compared to 12 other Sisters of Providence sites that did not have child care centers, but

Reasons for Not Evaluating Child Care Centers

Several managers whose companies sponsor on-site child care centers were interviewed about why evaluation research was not conducted at their firms. The findings revealed that some companies had evaluated their centers, but the results were not made public. For instance, Official Airline Guides conducts a review of its center every two years and submits a report to senior management. On most measures—ability to concentrate, job satisfaction, security, availability for overtime—these studies show that more than 90 percent of parents believe the center improves their performance. An executive in human resources at Official Airline Guides reports that one of the strongest perceived effects is on the company's ability to recruit, not just working mothers, but all categories of employees who want to work for a company with innovative benefits.

The director of the Laurance Armour Day School serving employees of Rush Presbyterian/St. Luke's Medical Center said that the hospital "takes it on faith" that the center is improving employees' work performance and has not conducted an evaluation. She keeps her own statistics on employee retention. Every time the hospital acknowledges a group of employees who have reached a new milestone in their tenure at the hospital—5, 10, or 20 years—the director looks to see how many had children in the day care center at one point. In one instance, she found that 25 of the 60 people reaching a new plateau had used the center, a significant proportion since the center serves less than 1 percent of the hospital population.

This director also believes that evaluations would be methodologically difficult and time consuming for the center's staff, particularly considering the complexity of surveying employees from 45 departments. More concrete data would be useful, she says, only when there has been a bad year and pressure exists to trim budgets.

Other firms expressed different reasons for not evaluating their centers. At Johnson Wax, the firm's senior counsel explained that the center was not created to reduce turnover or absenteeism or to improve productivity. As an employee-oriented firm, the company felt it was the right thing to do for employees and their children. To the extent that evaluations take place, they focus on the quality of the center's program.

Management at Fel-Pro, Inc., also feels the company's center is an appropriate service to provide. They were concerned that an evaluation might make it appear that the company had a problem, or that the center had been developed for reasons other than employer awareness. Parent satisfaction with the center, assessed in a general way, has been found to be very high.

Fel-Pro is currently considering a study of its center. According to the center's director, a large enough sample is now available, with 200 parents having used the center over the past eight years. The company has also sponsored a summer camp and implemented an emergency child care program that may also be examined. Fel-Pro reports receiving numerous calls from other companies looking for evaluation data, providing additional incentive for a study.

At the U.S. Senate Employees Child Care Center, evaluations have not been conducted, according to the director, because "people were so glad to get the center, no one has worried about an evaluation." A distant relationship exists between this parent-governed center and the Senate that houses the service.

Based on the findings, it would seem that a company's willingness to conduct an evaluation of its child care program depends upon the rationale for the center, the perceived levels of satisfaction from parents, financial pressures, outside requests for data, and the complexity of the research that would be required.

which had 50 or more women employees with children under 18 years of age. Although the hospitals all belong to the same network, they operate in communities with different child care markets, unique cultural conditions, and distinct employee populations.

On-site programs are also subject to variations in quality and cost. These factors, in aggregate, affect the potential impact of any on-site center. Despite these limitations, the study finds that an on-site care facility makes child care easier. Mothers at the hospital with the child care center reported less stress than mothers at other hospitals. They were also less likely to have changed their child care arrangements in the last year, found it easier to locate child care, and deal with personnel policies as they relate to child care responsibilities.

On the minus side, the study uncovered no evidence that an on-site center reduces absenteeism. Absence rates in the Anchorage facility were the same or worse than at other sites. As the hospital staff indicated: "The mere presence of an on-site facility does not necessarily reduce interruptions, lateness, and other absenteeism, since there are still difficulties associated with getting children ready for the day, delivering them to the facility, and so forth."

A limited number of employers have conducted cost/benefit analyses, evaluations, or empirical studies on the effects of their child care centers (see box above). One deterrent to conducting evaluations is the complexity of the research methodology. While some of the studies are flawed, consistencies in the findings suggest that in order for the center to yield its potential to the company, the child care program must be tailored to employee needs and job demands, and flexible in accommodating a variety of schedules and children.

Mixed Views on Absenteeism

It is logical to assume that absenteeism in a workplace with a company-sponsored center would decrease due to the stability and quality of the program, and that absences due to provider illnesses or program breakdowns would be eliminated. However, several studies report increased absenteeism among center users, a finding attributed largely to sick children.

The higher incidence of absence may be a function of the company-sponsored center's policy and provision for sick children. Employer concern about liability may lead companies to adopt strict sick policies that do not permit their centers to admit mildly ill children. The company has more to lose if the illness becomes an epidemic and many parents stay home with sick children. At a community center, parent absences due to an epidemic would be distributed among a number of employers. In addition, company policies may affect the degree to which absenteeism leads to a loss of productivity. If companies sanction paid absences to take care of sick children, for example, employees may respond to this flexibility and trust by making up lost time on their own. Thus, it is not clear whether the gains from the reduction in the number of child care breakdowns, provider illnesses, and reduced worry over quality are offset by the increased absences due to sick children.

Practical experience offered by several employers helps explain how absenteeism is affected by an on-site center. Susan Doctors, general manager of human resources at Official Airline Guides, observes that higher absenteeism among parents using the company's center might be explained by the company's strict sick policy. She also suggests that "parents may have lost their community network of neighbors and the option of having grandma come across town to pick up the child." Believing that parents belong at home with their sick children, the company provides three personal days that can be used to care for sick family members. On the other hand, the director of the child care center at Fel-Pro, an automative gasket maker in Skokie, Illinois, reports that the company's on-site center was comfortable with accepting a mildly ill child because the parents are nearby and can be called if the situation worsens. Parents are also on hand to administer medication, which center staffs are not permitted to do. Given their concerns about health, hospital centers might be expected to have very strict sick policies, so that absenteeism might increase. However, the director of a hospital-based center in Chicago, Illinois, contends that sicker children are more likely to be admitted because a full-time nurse is on site.

Absenteeism rates are also related to the age of the child. Older children are less likely to become ill, while younger children will be more susceptible to germs.

Managers' Perceptions

Eight studies questioning managers about the effects of child care programs include three national surveys of multiple companies providing child care support (generally in the form of a child care center). Two studies were conducted on statewide samples of employers that may or may not have had a child care program in place, and three measured the perceptions of managers who supervise center users. Some of the samples included managers who were able to observe the actual work performance of center users, while other managers had secondhand reports of the program's impact, and still others had formed opinions based on news reports and personal biases (see Table 14 on page 46).

Not surprisingly, the managers least likely to perceive any positive effects of a child care program were found in the New York State study, where the overwhelming majority of employers were not providing any child care support. In a 1986 survey for the Governor's Task Force on Child Care of 1,041 small-, medium- and large-sized firms, well under 50 percent of managers expected any beneficial impact from a child care program. Managers' perceptions, however, revealed uncertainty more than negative reactions. The expected benefits mentioned included improvement in employee morale and a reduction in absenteeism, turnover and employee stress.

Overall findings from the New York State study may be explained by the preponderance of small companies represented in the sample. However, it separates the views of managers in small-, medium- and large-sized firms. As Table 15 (page 46) indicates, the larger the company, the more likely the manager is to perceive a positive gain from having employer-sponsored child care. This finding is confirmed in the other statewide studies, where primarily large firms were surveyed.

Three national surveys of employers with some form of child care assistance were conducted in 1978, 1983 and 1984. They covered 440 firms, although some overlap may be present in the samples. A company-sponsored center was the most common form of child care assistance reported. Recruitment and absenteeism were the strongest perceived benefits of company child care initiatives. In evaluations of two of the three on-site centers where managers who supervised center users were surveyed, morale improvement was seen as the greatest benefit.

Across all eight studies, morale is seen as the most positive outcome of company-sponsored child care—it was ranked highest in four of the eight studies. Absenteeism was second. Managers in Minnesota and the Florida child care center gave it top ranking, while three others reported it as the second most important benefit.

Parent/Employee Perceptions

Six studies surveyed the users of the child care centers (see Table 16 on page 47). These include three state-sponsored centers, two hospital-sponsored centers, and one corporate center (Dominion Bankshares in Virginia). Generally, the percentage of users reporting a positive effect on any of the measures presented is higher than the percentages of managers evaluating

Table 14: Manager Perceptions of Benefits Gained from Employee-Sponsored Child Care Centers

	Managers of Center Users			*Managers in Multiple Companies with Child Care*			*Managers in Multiple Companies With or without Child Care*	
	Dominion Bank 1988	*WI 1987*	*Florida 1987*	*Perry 1978*	*Magid[1] 1983*	*Burud 1984*	*Minnesota 1982*	*New York 1986*
Improves: Productivity	**48%**	60%	38%			49%	72%	32%
Motivation		43			67	63		
Satisfaction		66			170	83		
Attitude towards work	40			55%				
Morale	**70***	**88***			345	**90***	**85**	**44***
Reduces absenteeism	45	71	**62***	**72**	**214**	53	**89***	**42**
Reduces tardiness	33	54	43		88	36	67	36
Reduces stress								41
Increases scheduling flexibility						50		
Reduces turnover		23		57	211	65	71	39
Improves attitude toward employer				65				
Increases loyalty/ commitment						73		35
Increase in women returning from leave		43			208	79		
Improves recruitment				**88***	**448***	**85**	73	35
Public image/publicity		**77**		60	137	80		
Availability of temporary help					26			
Quality of work force					205	42		
Equal employment opportunity					13	40		
Improves community relations				36	154	**85**		
Improves quality of products/services	30					48	37	
Reduces training costs								14

Boldfaced numbers indicate the highest and second-highest rankings in each study. An * indicates highest ranking.

[1] The Magid study findings are shown as rankings, not percentages, as they are in the other studies.

Table 15: Effects of Child Care Support on Employees' Work Behavior

Percent believing support has positive effect, by size of company.

	Size of Company			
	Up to 100 (N=285)	*101-500 (N=253)*	*501-1500 (N=220)*	*Over 1500 (N=204)*
Recruitment	29.1%	34.0%	44.6%	47.6%
Retention	33.0	34.8	49.5	52.9
Absenteeism	31.6	41.5	54.1	56.9
Tardiness	27.0	36.4	47.3	48.5
Stress	32.3	40.3	53.2	54.9
Morale	37.2	44.7	57.3	54.4
Loyalty	32.6	34.8	44.1	41.2
Training costs	12.6	13.5	17.3	18.1
Productivity	27.0	30.4	40.0	40.2

Source: New York State Commission on Child Care, *Employers and Child Care in New York State*, (1986), p. 26.

Table 16: Employees' Perceptions of Benefits Gained from Employer-Sponsored Child Care Centers

	Dominion Bank	*Methodist Hospital*	*Southeastern Hospital*	*State of Wisconsin*	*State of Florida*	*State of New York*
Improves productivity	67	61	51	**73**	60	**47**
Increases motivation				72		
Improves morale		**79***				
Decreases absenteeism	**84***	**75**	67	72		
Decreases tardiness	60	**79***	**60**	46	60	
Reduces stress					57	**83***
Improves scheduling flexibility	40	69		**82***		
Able to work more overtime	63	62				
Able to work odd shifts		43	42			
Reduces turnover	70	41	**72***	25	43	35
Improves attitude toward employer					**84**	
Increase in women returning from leave		33				45
Improves recruitment		51			81	
Improves public image					**87***	
Would recommend employer	**74**					
Improves promotability		17				

Boldfaced numbers indicate the highest and second-highest rankings in each study; an * indicates highest ranking.

these effects, but less consistency is evident in parent responses across the studies. Two of the surveys report morale as the most likely benefit to result from use of the center. Employees also tend to believe that their absenteeism has declined, and their productivity improved, because of the child care center.

Actual Outcomes

In the six experimental studies conducted between 1972 and 1988—testing 12 different possible outcomes—the most positive benefit of an employer-sponsored child care center appears to be a reduction in turnover (see Table 17, page 48). Four studies found lower turnover rates among center users and a comparison group. (One study was a cost/benefit analysis with a comparison group that did not conduct statistical tests.)

Improved recruitment potential was the second ranked benefit in the studies. Statistically significant findings in two studies document that employee acceptance of employment at the firm was related to the child care center. Similar results showed that center users were more likely to recommend the employer because of the center.

Differences Between Perception and Reality

When comparing Tables 14, 16 and 17, which summarize the findings of all the studies reviewed, notable differences appear between outcomes perceived by employees and managers and those actually occurring as reported in the experimental studies.

The primary benefit of an employer-sponsored child care center as measured in experimental studies appears to be reduced turnover and improved recruitment, while managers and center users are more likely to indicate that morale is the greatest benefit. Managers across studies agree that absenteeism can be reduced and employees are more likely to report an improvement in productivity.

It is evident that the actual benefits of a child care center may be very different than those expected by managers and employees, and that realistic expectations for company child care programs need to be established (see box on page 49). Given labor shortages and growing competition, turnover and recruitment effects of a company-sponsored child care center may be the most important benefits for employers to derive.

Parental Leave

Since the number of working women who will become pregnant during their work careers is increasing, companies are assessing their leave policies for employees, and the impact they may have on decisions to return to work. In a 1981 survey of 1,000 companies by Columbia University, researchers concluded that less than 40 percent of working women are able to take a

Table 17: Findings from Experimental Studies

	Krug, et al 1972	*Milkovich, et al 1976*	*Youngblood, et al 1984*	*Dawson, et al 1984*	*Marquart 1988*	*Union Bank 1988*
Improves productivity/ performance		0		*		+
Increases job satisfaction			*		0	
Improves morale						+
Improves organizational climate			*			
Decreases absenteeism	–	*	0	0	+	+
Decreases tardiness	–					+
Reduces stress					0	
Able to work overtime				*		
Reduces turnover		*	*	*	*	+
Increases loyalty/ commitment			*		0	
Increase in women returning from leave						+
Improves recruitment	+			*	*	+
Would recommend employer				*	*	
Improves community/ public relations						+
Improves promotablility				0		

* Statistically significant differences found between center users and companion group(s).
+ Differences found between center users and others, but no statistical test proved it.
0 No differences found, or couldn't measure the outcome in question.
– The opposite effect occurred, i.e., absenteeism increased.

6-week leave with some income protection. The NCJW study found a comparable number of women forced to choose between their jobs and their babies.

Among women in the NCJW study who did not resume their jobs after maternity leave, 50 percent based their decision on job satisfaction. Health benefits and child care assistance also made a difference. Another 20 percent said that not being able to make "satisfactory child care arrangements" was a deciding factor. The NCJW report concludes: "While some attrition of new mothers from the labor force is entirely voluntary and inevitable, these findings suggest that substantial attrition may be caused by child care difficulties that could be reduced through employer assistance."

One factor related to the workplace impact of parental leave is the ability to replace the individuals who take leave. In a 1987 study,[80] the U.S. General Accounting Office found that fewer than one in three absent workers is actually replaced, that the cost of the temporary replacements is similar to or less than the cost of the employees who are replaced, and that employers in general do not perceive a significant loss of output. In a 1990 study conducted by the Families and Work Institute, employers in four of the states that mandate parental leave were most likely to assign work temporarily to other employees (92 percent used this method), pay overtime to existing employees (66 percent), or hire an outside temporary replacement (41 percent).

The NCJW study also found that workplace accommodations are gratefully reciprocated by pregnant employees (see Table 18, page 50). The accommodations considered important were: (1) job-protected leave; (2) some wage replacement; (3) health insurance coverage during leave; (4) sufficient paid time off for medical appointments and occasional sick days; (5) flexible scheduling that allows for adjustments in the work routine; (6) parenting leave following disability; (7) help with finding or paying for child care; and (8) a sensitive supervisor.

Among the workplaces studied, 2 percent of firms had none of these provisions and 2.5 percent had all eight. The average score for all workplaces was 60 (with "0" assigned to those with no accommodations and 100 to those with all). Workplaces with scores in the highest 20 percentile were considered "highly accommodating" of pregnancy, while workplaces in the

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[80] U.S. General Accounting Office, *Child Care: Employer Assistance for Private Sector and Federal Employees*, GAO, Report No. 66D-86-38: Washington, D.C., 1986.

Steps for Evaluating Child Care Programs

In a study commissioned by the U.S. Department of Labor in 1989, Berkeley Planning Associates screened over 50 companies with child care benefits and conducted intensive case studies of seven firms to understand their interest in evaluating their efforts. The authors conclude that there is little likelihood of most firms being able to conduct very methodically rigorous evaluations of their own child care programs, even if they were motivated to do so. Although an academic standard of research may not be feasible, it is possible for firms to be better informed than they are now, and to enhance their planning and decision making about child care. The following steps were presented for employers considering some evaluation of their child care initiatives:

(1) *Undertake a careful planning process and needs assessment before implementing a new benefit.* Child care benefits should be designed to suit the needs and capacities specific to the organization.

(2) *When designing an evaluation, focus on important outcomes.* Begin by identifying the behavioral effects most important to the firm, and, among these, those most likely to be influenced by the type of child care program that is offered. Focus on a small number of possible effects.

(3) *Recognize the effect of other policies.* Be aware of the extent to which other policies and benefits of the firm may be affecting employee behavior. To some extent, the firm may be evaluating its work-family policies as a whole rather than the child care program in particular.

(4) *Think about data needs in advance.* This will enable the firm to design data-collection systems that will capture the most important information about employee characteristics, behaviors, and attitudes.

(5) *Collect qualitative as a well as quantitative data.* Both surveys and focus groups can provide valuable information.

(6) *Understand what the study can/cannot do.* Expectations about the kind of information to be produced should be realistic and employers should have an idea of how this information can be used. Be sure to take into account study limitations when interpreting results.

(7) *Look at cost-effectiveness.* Consider cost-effectiveness estimates (qualitative comparisons of returns given a fixed dollar amount to invest) as a more realistic alternative to benefit-cost evaluations, especially where study designs have significant limitations or benefits are very difficult to quantify. Another alternative is break-even analysis: Calculate program costs, determine the break-even point, and estimate from quantifiable evaluation findings how close the program is to breaking even.

For firms interested in conducting more rigorous and complex evaluations and who can rely on expert advice, the following additional considerations are warranted:

(1) *Plan prospective evaluations as needed.* When pre-program data are not available, plan a prospective longitudinal evaluation and expect to collect data long enough to show the effects of interest (e.g., a minimum of two years for turnover effects, one year for absenteeism).

(2) *Include behavioral comparisons.* If the goal is to understand something beyond user satisfaction and utilization, include some type of comparison in the study. This may be a comparison of participants' pre-program behavior to post-program behavior and/or a comparison of participants to nonparticipants.

(3) *Use external comparisons as needed.* If no pre-program data are available, and no comparison group can be constructed within the company, devise a comparison group within another (preferably similar) firm. Differences between both the employee groups and the firms should be taken into account.

(4) *Be aware of sample size problems.* Sample sizes of over 50 are desirable. If the user group is small, nothing can be done to increase the size of this sample. A small user group may be the reason to extend the period of evaluation. Having a very small internal comparison group is an argument for looking for an alternative group outside the firm.

Adapted with permission from Berkeley Planning Associates, *Employer-Supported Child Care: Measuring and Understanding its Impacts on the Workplace, Final Report.* Prepared for U.S. Department of Labor, Employment and Training Administration, Office of Strategic Planning and Policy Development, Washington, D.C.: 1989, pp. 203-206. See also *A Guide to Assessing the Benefits and Costs of Employer Child Care Assistance*, prepared by Berkeley Planning Associates, 440 Grand Avenue, Suite 500, Oakland, California 94610.

lowest 20 percentile had "low accommodation." In general, women in the highly accommodating companies were more satisfied with their jobs; took fewer sick days; were less likely to be ill on the job; worked more on their own hours; were more likely to work during their third trimester; and were less likely to quit.

The average number of absences from work due to illness among all women in the sample was only 2.6 days over 8 months of pregnancy. Absences in the highly accommodating companies averaged about 1.3 days less than those in the companies with low level accommodations. Among the women who had stopped working during their third trimester when interviewed, those from workplaces with high accommodations reported having worked about one-and one-half months longer than women from unsupportive companies. The study concludes that "accommodating employers benefit from having experienced workers stay on the job longer."

The NCJW study also found a relationship between job satisfaction among pregnant workers and the degree to which pregnancy is accommodated in their workplaces. Only 41 percent of women working for low

Table 18: Employees' Response to Company Accomodations for Pregnancy

Level of Job Satisfaction (N=2257)	*Degree of Accommodation*		
	Low	*Mid*	*High*
Not satisfied at all	8%	3%	1%
Somewhat satisfied	51	36	26
Very satisfied	41	61	73

Behavior	*Degree of Accommodation*		
	Low	*Mid*	*High*
Average number of days missed due to illness in pregnancy (N=2216)	3.4	2.5	2.1
How often ill on the job? (N=2218)			
Hardly ever	29%	41%	51%
Not often	22	22	21
Often	22	18	16
Very often	27	19	12
Spend unpaid time on work? (N=2255)			
No	75%	66%	63%
Yes	25	34	37
Still working in third trimester? (N=2257)			
No	45%	26%	21%
Yes	55	74	79

J.T. Bond, *Accommodating Pregnancy in the Workplace* (New York: National Council of Jewish Women, 1987).

Paternity Leaves

Fathers are less likely to be offered parental leave and when they are, it is usually only a few days or weeks.* There is no indication that fathers leave their jobs to care for newborns. A 1983 study by Catalyst found that 37 percent of responding companies offered unpaid leaves to fathers. In the 1988 survey by The Conference Board, 44 percent of companies made leaves available to fathers, 92 percent of them unpaid. Eighteen days is the maximum amount of leave time offered fathers according to The Conference Board survey.

Only nine of the 384 companies participating in the Catalyst study reported that a father had actually taken such unpaid leave. In two studies, one of 36 mothers and another of 40 fathers, fathers were reported to have taken 5.6 and 6.6 working days off, respectively. In Sweden, in 1981, 85 percent of fathers took an average of 7.5 days off from work following childbirth. Anecdotal reports indicate that a growing number of men in the United States are requesting leave.

In Pleck's review of the literature, he concludes that while a few fathers take advantage of long-term leave policies, they do take short-term leave through the "manipulation" of vacation and sick leave and other formal leave. No research is available on the work behaviors of men who take time off for their babies compared with those who do not.

*** Graham L. Staines and Joseph H. Pleck, *The Impact of Work Schedules on the Family*, Ann Arbor, Michigan: Institute for Social Research, 1983.**

accommodating firms indicated that they are very satisfied with their jobs, compared to 73 percent of women in companies that are very supportive.

A U.S. Chamber of Commerce survey reported that half of the responding employers said they had formal parental leave plans. Of these companies, 61 percent said their leave plan improves their ability to recruit and retain workers. (See box above for an update on paternity leave.)

What is not known about pregnancy and parental leave is whether there are differences between first-time and repeat experiences. Anecdotal evidence suggests that women are more likely to leave their jobs after having a second child. The balancing act becomes more precarious, so that greater flexibility is required by company, manager and employee.

Flextime

Work hours have changed little since World War II. Any changes in the workweek prior to the 1950s were designed to protect the health of workers, increase leisure in order to stimulate consumer demand, and ultimately to increase the standard of living. Time off was also thought to increase productivity by reducing fatigue that can lead to reduced output, lower quality work, increased sickness costs and unnecessary absences.

The new demographics of the work force are creating pressure for alternative work schedules. Baby boomers generally feel entitled to make more decisions about their work. They also express more interest in leisure time. The shift to a service economy, where customer contact is vital, also plays a role in the emergence of alternative work schedules that can accommodate longer work days. While these pressures call for a change in the scheduling of hours and where they are worked, they do not necessarily mean a reduction in the workweek.

Flextime can help employees with family responsibilities by: (1) allowing an employee to arrange more time with the family; and (2) reducing work-family conflict by eliminating or reducing scheduling problems.

Prevalence of Programs

In 1978, an estimated 2.5 to 3.5 million workers (excluding professionals, salespeople, and the self-employed who typically control their own hours), were on flextime schedules. By 1985, Department of Labor data show that 9.1 million full-time wage and salary workers, or 12.3 percent, had flexible work schedules.

Data further indicate that men are more likely to benefit from flextime than women.[81] Although more flextime programs are in the private sector, 20 percent of Federal government employees have flexible work schedules and 42 states offer flextime to their employees. The number of employees on flextime in Canada and Western Europe is significantly higher than in the United States.

Based on a 1989 Conference Board survey, half of the 521 large companies responding offered flextime. About a third of these firms had expanded their use of flextime in the recent past. About half planned to increase flextime availability in the near future.

A 1985 survey of medium-sized firms conducted for the American Management Association by Goodmeasure, found 35 percent of firms offering flextime to their employees. Half of these firms had adopted flextime between 1980 and the survey date.

A slightly lower percent is reported in a 1988 study by the American Management Society (AMS) (290 companies responding). Thirty-one percent of employers reported having flextime in the AMS study, double its 1977 figure of 15 percent.

Companies with many years experience using flextime have helped stimulate growth of these programs because of the positive responses from employees and managers. A 1978 review of 14 flextime studies, with an occasional exception, showed that the introduction of flexible work schedules produced a generally positive shift in employee attitudes and did not result in abuses.[82] (See box on page 52.)

Individual company studies, such as the one examining the first experiment in flextime at a German aerospace firm in 1967, found that flextime led to a 40-percent reduction in absenteeism, the disappearance of tardiness, and a dramatic improvement in employee morale. Another company, Messerschmitt-Bolkow-Blohm (MBB) surveyed flextime users in 1969 and found that two-thirds of the employees reported better working conditions, a third noted a better balance between work and private life, and a fourth said they had an easier commute (see Table 19).

Among 43 studies of flextime reviewed in 1980, only 8 inquired into the effects of family relationships, largely, perhaps, because most companies did not implement flextime programs to accommodate family needs.[83] Companies were more likely to be concerned with tardiness, commuting, or morale. Furthermore, other outcomes related to flextime are more easily measured, such as the number of insurance claims, stress-related illnesses or accidents, or tardiness.

Table 19: Reports of Effects of Flextime

	MBB (1969) N unknown employees	*GAO (1985) 2,000 employees*	*AMA (1978) 196 companies*	*AMS (1988) 290 companies*
Better working conditions	65%			
Better balance with private life	31	72%		
Easier travel	31		77	
Better fit work rhythm	21			
More freedom	12			
Better fit of work to performance	6			
Improved morale		74	97	40
Improved productivity			48	
Reduced turnover			53	17
Reduced absenteeism			73	17
Reduced tardiness			84	82

As Ronen reports, flexible hours can satisfy both intrinsic and extrinsic needs. Extrinsic needs are met because flextime improves basic work conditions by allowing adjustments in commuting times, reducing anxiety about tardiness, and shifting management's focus away from monitoring attendance. The intrinsic benefits accrue because flexible work schedules increase employee responsibility, independence and growth potential, thus motivating the employee. One study concludes that "under conditions when flexible work schedules reinforce specific employee needs, a contribution to satisfaction, job involvement, organizational commitment and work attendance can be expected."

The recent Conference Board study found that only 2 percent of firms collect data on the costs of their flextime programs.[84] While 84 percent of firms that offer flextime are satisfied with the job performance of employees, only half (51 percent) are satisfied with the ease of supervising them. This discrepancy between the effects of flextime on employee work performance and ease of supervision was found with all alternative work schedules. Flextime was typically mentioned as the arrangement found most advantageous in reducing absenteeism and turnover.

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[81] Earl Millor, "How Prevalent are Shift Work and Flextime?," *Monthly Labor Review*, November 19, 1986.

[82] Stanley D. Nollen and Virginia H. Martin, *Alternative Work Schedules, Part I: Flextime*, New York: AMACOM, a division of American Management Associations, 1978.

[83] R.A. Winnett and M.S. Neale, "Results of an experimental study on flextime and family life," *Monthly Labor Review*, November, 1985, pp. 29-32.

[84] Kathleen Christensen, *Flexible Scheduling and Staffing*, The Conference Board, Research Bulletin 240, 1989.

Perceptions of Users and Non-Users of Flextime

Good and bad effects of flextime among 196 users.[a]

Good effects [b]	*Bad effects* [c]	*Sometimes good, sometimes bad* [d]
Raises employee morale	Management job made more difficult	Coverage of work situations
Reduces tardiness	Internal communication worsened	Employee scheduling
Eases employee commuting		
Reduces absenteeism		
Makes recruiting easier		
Reduces turnover		
Increases productivity		

[a] In order from strongest to weakest.
[b] Half or more of all users reported better results due to flextime, with few or no worse results expected.
[c] Up to half of all users reported worse results here, with few or no better results reported.
[d] Responses about equally divided here, no change, or worse results caused by flextime.

Expected good and bad effects of flextime among 374 non-users.[a]

Good effects [b]	*Bad effects* [c]	*Sometimes good, sometimes bad* [d]
Raises employee morale	Management job harder	Productivity
Makes recruiting easier	Employee scheduling harder	
Reduces absenteeism	Work scheduling harder	
Reduces tardiness	Coverage worse	
Reduces turnover	Internal communication worse	
Eases employee commuting	Utilities costs higher	
	Personnel administration harder	
	External communications worse	
	Support services cost more	
	Relationships with customers worse	

[a] In order from strongest to weakest.
[b] Half or more of all non-users expected better results due to flextime, with few or no worse results expected.
[c] Half or more of all non-users expected worse results due to flextime, with few or no better results expected.
[d] Responses about equally divided among better, no change, or worse results expected under flextime.

Source: S.D. Nollen and V.H. Martin, *Alternative Work Schedules: Flextime*, an AMA survey report, New York, AMACOM, 1978, pp. 21, 29.

More Time is Really More Convenient Time

While flextime does not reduce the total number of hours worked, more conveniently arranged hours may permit more time spent on activities outside work. In a study of 79 clerical workers, regular users of flextime showed a significant change in nonwork activity, while those who were not on flextime did not.[85] A 1978 evaluation of flextime at John Hancock Insurance Company found that workers increased their family time while on flextime. In another study, groups with more discretionary time displayed the strongest attachment to their jobs. This was confirmed in another study where 90 percent of those on flextime indicated that this work arrangement had increased their interest in remaining with the organization.

A dramatic reduction in both absenteeism and tardiness was experienced by 92 organizations participating in a national survey. Turnover was less affected, with 61 percent reporting no change, and 39 percent reporting a reduction in turnover after a year. After 3 years of flextime, however, turnover reductions were reported by 64 percent of the firms, while 36 percent reported no change.

A 1985 study of 2,000 Federal employees by the U.S. General Accounting Office compared employees on flextime and those on standard schedules.[86] Eighty-nine percent of the employees with dependent care responsibilities were found to be satisfied with their work schedules, compared with 62 percent of those on fixed schedules. Three-fourths of the flextime users reported that the program had a positive effect on morale, and 72 percent used alternative work schedules to let them take care of family obligations, doctor's appointments, meetings and school carpools.

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[85] Jon L. Pierce, John W. Newstrom, Randall B. Dunham, Alison E. Barber, *Alternative Work Schedules*, Boston: Allyn & Bacon, Inc., 1989, p. 34.

[86] Halcy Bohen and A. Viveros-Long, *Balancing Jobs and Family Life*, Philadelphia, Pennsylvania: Temple University Press, 1981.

In 1981, a study of 325,000 employees by the Office of Personal Management revealed that flextime users spent more time with family, more time on household chores, and more time in children's school activities. The freedom to set work schedules enabled employees to spend less money for babysitting services. The data strongly suggest that alternative work schedules may enhance the quality of family relationships and child care.

Another study of federal employees, comparing flextime users with a control group, found that employees on flextime generally came to work earlier and gained increased family time in the evening. Bohen, who analyzed flextime at two federal agencies in 1981, found no significant differences in the time allocated to child care between those on flextime and those on standard hours, although flextime users increased the amount of time spent on housework. Researchers concluded that "flextime may increase the amount of time that wives spend in family roles and thereby render even more inequitable the traditional division of labor."

The Bohen study showed a slight discrepancy in the perceptions of shared household labor. While 50 to 60 percent of men said they shared responsibilities equally with their spouses, less than 40 percent of women agreed. About 40 percent of women wanted their husbands to do more housework, while 15 percent of men thought their wives should do more. Sixty-five percent of women wanted their husbands to assume more child care responsibilities.

Less Work-Family Conflict

The Bohen study reveals that flextime helps reduce work-family stress for single adults with no children, married women with no children, and married fathers in traditional families—but not mothers. According to the report: "The magnitude of the logistical, energy and time demands on families with two employed parents or a single parent cannot be dramatically altered by minor changes in daily work schedules." The flextime schedule under evaluation at this federal agency allowed variations of one-half hour at either end of the day. Such limitations on flextime seem to have little effect on diminishing work-family stress.

Staines and Pleck report in their analysis of the 1977 Quality of Employment survey that one-third of all workers believe their jobs and families interfere with one another. While gender does not make a difference in the overall level of work-family conflict, men tend to complain about excessive work hours while women are strained by scheduling conflicts. The authors also found that scheduling control means more than when to start and stop work; it can moderate the relationship between stressful work schedules and family life.

The analysis of alternative work schedules helps explain why the family is subordinated to work when work-family conflicts arise: Since people have less control over their work schedules than their family lives, families tend to make all the adjustments.

The overall work-family effects of flextime may be modest compared to other program initiatives. Research suggests that flextime plays a modest role in solving work-family conflict. Far more significant are the returns to the company through the elimination of tardiness, improvements in attitudes, reduction of absenteeism, and increased recruiting advantages. Since implementation costs are so low, little is needed to show a return on investment for flextime. Of the 196 companies in the AMA study, 80 percent report no change in personnel administrative costs, training costs, or support services (security or cafeteria) due to the adoption of flextime.

Employee Assistance Programs

Employee assistance programs (EAPs), designed to handle substance abuse and other employee problems affecting job performance, have been in existence for more than 20 years. Only a handful of EAPs (out of an estimated 8,000 to 10,000 company programs) have conducted cost-benefit analyses that have been publicized. Among the results of EAPs:

- The U.S. Postal Service claimed annual savings of $2 million;
- New York Telephone claimed annual savings of $1.5 million;
- Du Pont's EAP showed a net profit of $500,000 for one year;
- Burlington Northern Railroad claimed a $14 return on every $1 invested;
- A major airline reported a $16.35 return on every dollar; and
- United Technologies EAP director claimed a 3:1 return on investment based on increased productivity, lower insurance costs, reduced absenteeism—all in the first year.

Hewitt Associates estimates that the average per-employee cost of an EAP is between $18 and $36.[87] (The cost is divided by the entire employee population, not just users.) But the cost of employees' bad habits and problems that go unchecked appears to be significantly higher.

In 1980, Illinois Bell studied 752 problem drinkers before and after they had been referred to the EAP. The employees' job performance ratings before entering the program were "fair to poor" 90 percent of the time. After counseling and/or treatment, the ratings rose to 66 percent "good." The company concluded that the EAP helped to achieve a 52 percent decrease in disability claims, a 42 percent decline in off-duty accidents, and a 61 percent drop in accidents on the job. Without the EAP, one

[87] *Employee Assistance Program Benefits, Problems, and Prospects*, Washington, D.C.: Bureau of National Affairs, March, 1987.

employer found that an employee with alcohol problems is:

- three times more likely to be absent eight days or more;
- three times more likely to receive sickness benefits;
- four times more likely to have accidents; and
- five times more likely to file compensation claims.

Several literature reviews question whether anyone can identify and measure all program costs and whether benefits of EAPs can be identified and measured—and some question whether such measures are possible at all.

Sheila H. Akabas from Columbia University's Center for Social Policy and Practice in the Workplace, who addressed the Arden House group, commented:

> "In many ways, counseling is preventive intervention, especially if you get people early in the process. We have not figured out how to measure what does not happen. So in fact, if you solve that day care problem quickly or you take care of elder care, there is nothing to measure. Counseling programs also require psychological intervention. We have no way of measuring the effectiveness of psychotherapy...[therefore] we do not know how to measure the outcomes of employee counseling programs."

Some companies believe that employee reactions to the program provide adequate justification for its success. The Equitable's Charlotte, North Carolina office surveyed its employees after implementing an EAP and found that half of them reported feeling healthier, having a more positive outlook on life, and feeling a part of the company community.

After implementing an EAP, particularly one that develops a positive reputation, the number of people seeking its services and the number of referrals (by managers) to the program are likely to increase. Such growth may not be indicative of an increased incidence of problems. It may mean that people feel more comfortable seeking help for those problems, that referrals have become more acceptable, or that problems are more apparent.

Most of the research on EAPs focuses almost exclusively on substance abuse. Akabas comments:

> "The movement to make EAPs into so-called 'broad brush programs,'—programs that are not alcoholism-focused, but more a 'help-without-hassle' effort—has attracted everybody to the programs: employees with family problems (spouses, children and other relatives), and other concerns including health care, legal problems, and financial problems. In fact, one of the great debates in the EAP movement has been how much of the problem is alcoholism and substance abuse and how much of it is another kind of problem. There are indications that problem clarification very much depends on who is delivering the service."

One study found that 28 percent of the problems presented to the EAP were family-related. But alcoholism can either precipitate family problems or be caused by them. In essence, EAPs try to prevent behavioral and emotional problems from becoming physical ailments. The problems addressed in the evolving, broad-brush EAP cannot be quantified simply by measuring changes in absence or accident rates.

Akabas noted that one of the most important benefits of EAP-generated data is that it is not derived "from outside research, but is specific to the conditions in the particular company where the EAP exists. It is one thing to note that The Travelers' study found lots of people who were dealing with older adults and conclude that the company should have an older adults program. It is quite another thing to say, 'our EAP program sees 20 percent of the people who are coming in with elder care problems and we, in this company, need a program to deal with that.' A good management information system in an EAP program can document the need and can begin to change that workplace in order to respond."

The ability of an EAP to achieve these goals depends on the support for the program. A Hazelden Foundation report concluded that the emphasis on health care cost containment will put employee assistance programs "under increased pressures to contain costs and deliver better cost-effective services."[88] Some EAP experts caution that broad-brush EAPs may not be effective if proper resources are not devoted to their expansion.

EAP cost effectiveness is not a return on investment that shows up on the annual financial report, since the costs and returns are preventive and not easily quantifiable. However, continued efforts are being made to document the benefits of EAPs in order to protect their future and improve their services.

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[88] Ibid, p. 25.

Perspectives on the Research Process

A great deal can be learned from the experiences of companies and researchers who have been involved in worksite research on the family. To understand more about the research process—its purposes, resistances, costs, methodology, and usefulness—a panel of corporate managers was assembled at the Arden House Symposium to exchange research experiences. (Panel members are identified in the Method Box on page 6.) Their companies participated in research designed to define the problem—before most of their family-supportive policies or programs were implemented. Subsequent interviews were conducted with several companies that had evaluated various work-family programs and policies, and those who had not (see box, page 44). In addition, interviews were conducted with several researchers to get their perspectives on the research process.

The Rationale for Conducting Research

After conducting studies at three companies, researchers Googins and Burden from Boston University's School of Social Work prepared a paper outlining their reactions to the research process.[89] They focused primarily on the barriers to conducting work-family research and made some recommendations for overcoming those barriers. Their experiences confirm many of the issues raised by the corporate executives who managed the research process internally.

While the most frequently expressed purpose of conducting research among the companies interviewed was to learn more about the demographics of workers, the sources of data varied. At Digital Equipment Corporation, using external data was unacceptable to management because it would not construct a company profile. In the past, when employee populations were homogeneous, conducting a survey to create an employee profile was not necessary. Companies want to know how the work force has changed, how it may change in the future, and what problems result from these changes. Merck & Co., for example, recognized that they needed to learn more about dual-career couples and single parents in order to understand the size of the problem and whether it warranted a company response. IBM found relocation offers among dual-career couples turned down because of finances and a partner's career. The company wanted to find out whether a trend was developing that would lead to problems in staffing executive positions in the future.

Companies are also interested in comparisons among divisions of their firms, with their competitors in other companies, and with the U.S. population as a whole. At Du Pont, problems were arising at some company sites. The company's second survey was designed to measure the problems and articulate them quantitatively because, as Faith Wohl put it, "Quantitative arguments work at Du Pont—it is a research company."

Resistances to Worksite Research

Company resistance to research may be based on a concern about employee reactions to issues of privacy, the sensitive nature of the questions that are posed, and the expectation that the company should do more. A decision to proceed is made only when it is clear that the company is prepared to respond to the findings.

According to the researchers, since most companies believe that work and family are separate spheres of activity, the concept of work-family interaction does not exist. Thus, research on these issues is not considered a legitimate pursuit. Early studies of job performance and satisfaction, usually of men, focused on job-related variables. Early research on women focused on how female employment affected marriage and children, with the

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[89] Dianne Burden, Bradley Googins, Ceil Downey, and Ray Levesque, *The Politics of Evaluation Research. Gaining and Maintaining Access to the Work Setting for Social Research*, Boston, Mass. Boston University School of Social Work, 1986.

Surprise Findings

Several companies were surprised that gender issues surfaced in the way they did—or turned out to be less important than originally assumed.

At Du Pont, the finding that work-family issues are not just women's issues got management's attention. With the proportion of female employees approaching 24 percent, the most persuasive finding was the 70 percent of all employees with children under 13 who said they use some form of child care outside the home. It was evident that child care was a mainstream employment issue.

At Digital, officials were surprised that women with young children, regardless of marital status, have similar problems in balancing child care and home responsibilities. This illustrates that many men still do not participate equally in raising the children and doing home chores. Significant differences still exist between men and women on the extent of childrearing roles.

At IBM, male employees did not realize the extent of the diversity. For example, when comparing the household structures of male and female employees of different ages, women were found to represent far more varied types of households, including many singles with dependents, whereas men typically lived in traditional family settings. They were also surprised by the large number of men who said they would be likely to take a leave of absence following childbirth or adoption.

Surprises also occurred elsewhere. One Digital operation learned that of the 45 percent of women who were planning to have children in the future, 72 percent were planning to have them over the next four years, and many of them did not want to return to full-time jobs. With low unemployment rates at the time of the survey, managers at the surveyed location began taking a look at job redesigns and part-time work opportunities.

assumption that work would have a negative impact (see box above).

The company may also be concerned about uncovering negative findings, or findings that will strengthen the union position during contract negotiations. In one company studied by Burden and Googins, questions about employees' child care arrangements and problems were rejected by the labor relations department because the data could be used by unions to strengthen their bargaining position on child care during contract negotiations. Negative findings that reflect poorly on the company or management might be risky for managers to present. The researchers found that managers who perceive their security as tenuous are not risk-takers.

Another company issue centers on the legal consequences related to control over the company name in published findings. Several of the companies studied were willing to relinquish ownership rights to raw data as long as they retained absolute control over the way they were identified in publications or publicity.

Although some companies are predisposed to research as a tool for decision making, they may have a negative view of social research. For example, one company's unique management style is one that researchers like to study. But senior executives have been unhappy with case studies, developed for graduate programs, that have revealed company secrets and strategies.

IBM, another company with a long tradition of conducting research, found resistance in the wording of specific questions. "Do we really want to ask our employees if they are going to have or adopt more children in the next five years? How are we going to word the question that will allow us to ask about 'significant others' and partners?"

Company work environments, too, may not be ideal laboratories for research. Researchers can be shuttled from one manager to the next, and key players often change because of transfers or restructuring.

Some recommendations by the researchers for overcoming barriers to conducting work-family research at the worksite include:

- Build a relationship with managers inside the company.
- Gather information about current internal issues at the company.
- Link the project to vested interests, especially those of the inside advocates, in order to stimulate the commitment.
- Obtain management support. This will insure later acceptance since more managers will have been involved with the process.
- Pilot test the survey instrument and have groups of employees review it to weed out inappropriate or overly sensitive questions.

Response Rates

While company response rates vary widely, almost all covered in this analysis were above 50 percent. The response rate is affected by several factors, including the perception of company support for the issue being surveyed; the method of distributing the survey instrument; cover letters (how they convey the company's purpose and whether they include an endorsement from top management); the ease of completing the survey instrument; and, the degree of anonymity afforded.

The NCNB response rate was 72 percent. The cover letter was signed by the president, undoubtedly a factor in gaining participation. Branch managers followed up with their own letters. Employees were asked to complete the survey at work because of the high number of hourly employees who would need to be compensated if they completed the questionnaire on their own time. Similarly, at Digital, with a survey that took at least 45 minutes to complete (a disincentive for employees to participate), one unit allowed employees to go into the cafeteria on company time to work on it.

The potential for feedback may affect the response rate, too. IBM's periodic opinion surveys, which are completed in group settings, provide feedback at a departmental level. These surveys typically have a 90 percent participation rate. The survey on work/life issues was mailed to the employee's work station, and employees learned there would be no feedback. This may explain the lower response rate of 78 percent. This response, however, is the *highest* recorded among IBM surveys other than the opinion survey.

Does Research Guide Work-Family Responses?

Companies learn what support employees need from their surveys. The findings can be used to convince skeptics in the organization of the need for change and help direct the appropriate courses of action.

At Du Pont, one of the most urgent needs that surfaced was more information about child care services. The finding prompted a series of recommendations, one of which was to set up a resource and referral service in 1985 for employees and community residents. The service has since expanded from the corporate headquarters program to a statewide information and referral service.

NCNB began a new maternity leave policy based on their survey results showing that many women wanted more flexibility in their return to work. The four-month maternity leave was changed to a six-month leave with various phase-in options, and included full-time benefit coverage.

And at Digital, the survey provided additional impetus for programs and initiatives already in their development stage.

Dissemination of Findings

Managers and researchers report that feedback is essential and should be provided throughout the company. Attention should be paid to the implications of the findings and what they mean for new company initiatives. Some guidelines offered:

- Conduct meetings and briefings with personnel management teams.
- Advise managers and employees separately, and provide each group with project updates to arouse curiosity and gain support.
- Attend formal management meetings in order to gain visibility for the research and present project updates; seek other ways to be regularly available to the company.
- Publicize project updates in in-house publications.
- Post notices throughout the worksite that outline the steps of the project.
- Hold informal discussions with employees as the project progresses.
- Monitor the project to prevent misinformation and rumors, and to alleviate fears about the project.

Directions for Future Research on Work-Family Issues

At present, consistent research findings are available to identify the nature of the problem and the individuals most likely to be affected. Sufficient evidence also exists to convince receptive employers that work-family programs can positively affect the bottom line. While no amount of research will convince some employers, others may need more specific information in order to take action.

As noted earlier, gaps in research exist because of the sensitivity of the issues, corporate naivete about social science research, and the cost of conducting such research. A more significant factor inhibiting work-family research may be related to the stage of employer involvement in work-family issues: Many companies are still debating whether or not to get involved, and are not at the point of focusing on specific responses. Therefore, research to date has more frequently been used to persuade than to implement.

The new generation of research calls for greater sophistication in process and purpose—inquiries that are interdisciplinary, longitudinal, comparative and visionary. Outlined below are some ideas for research that meet these standards and can further the knowledge about work-family problems and programs.

Interdisciplinary Research

The issues being addressed—an interaction between the organization, the individual and the family—call for experts working together within each realm to enhance the quality of findings, improve their usefulness in designing a corporate response, and avoid clashes between researchers who want to know about the well-being of the family and the managers who want to know about the well-being of the organization. Some areas for study include:

Revisit theories of work motivation and satisfaction by including a family focus. The question is whether family supportive policies motivate employees to become more productive or merely prevent them from being less productive. New values, worker expectations and lifestyles, as well as demands for workers, present challenges to classic management theory.

Publish available research on work-family problems. Generally, company needs assessments are not publicly available or, at best, not widely available. Research buried in academic journals is not readily accessible to the business community. More "bilingualism" is needed in the presentation of research findings.

Improve the practical application of work-family responses by involving organizational development experts and strategic planners. If schools of business administration were to consider work-family issues in their curricula, managers would not only be better prepared when they entered organizations, but new case studies and analyses, perhaps textbooks, would further understanding of the work-family nexus.

Holistic Research

Presumably a more interdisciplinary research team would produce more holistic, or all encompassing analyses. Some methods for establishing more comprehensive research are:

Study programs that have failed and examine problems that arise in the implementation process. Current research presents only the good news.

Examine how work-family problems and programs affect co-workers and others indirectly involved. Like secondary smoke, do work-family conflicts experienced by one employee poison the atmosphere for others? Are co-workers more productive when colleagues have their work-family problems solved? Are employees without children resentful of accommodations to child care needs and thus perform poorly?

Study the effect of the corporate culture on work-family conflicts. Such investigations would provide useful information regarding aspects of the culture that might need to change. The deeply rooted values and attitudes of people working for the organization condition a company's response—or lack of response. For instance, an on-site center may not be beneficial if employees are still expected to function in an unsupportive environment.

Comparative Research

Research can be undertaken to compare various company options in order to determine their relative effectiveness in solving certain problems. Companies may be able to learn who is likely to benefit from a given response, in what ways, and with what financial cost and payback. Some ideas for consideration:

Compare the same option in several companies. In this way, the impact of culture can be better understood and insights gained into the effectiveness of implementation strategies, such as methods of communication and employee involvement.

Conduct studies that provide more comparisons between men and women of comparable age, job, and family status. Virtually nothing is known about how men and women respond to different corporate programs.

Examine work-family issues in unsupportive environments at work and in the home. By definition, only progressive companies are studied either because they have been the only ones willing to let researchers conduct the investigations (they presumably have nothing to hide), or because they are among the minority of firms that have family supportive policies that can be evaluated.

Look more closely at lower-income families and the kinds of work-family conflicts they face, as well as their reactions to various company supports. This population is important to study because a large number of welfare women with children over three years of age are now required to work. The kinds of jobs they take and the forms of support they need are likely to be very different than those discussed in the current body of research.

Compare the effects of various programs on high performers versus low performers. The research on child care centers had difficulty measuring productivity because most managers rated employee performance very high. What are the effects of various company programs and policies on low-performing employees? Without some of this research, companies may pursue work-family initiatives in the same atmosphere of meritocracy that exists today: Only those who are deserving should be accommodated. The view is that ad hoc policies on flextime, work-at-home options, or even parental leave should only be given to high performers. What might be overlooked is that the low-performing employee may be less productive because family needs are unmet.

Learn more about the different options themselves. Research should go beyond the simple assertion that child care is good for business or that flextime eases work-family strain. The question is, how much flexibility or what type of child care center? Do differences in administrative structures matter? For example, do the Procter & Gamble centers run by the Salvation Army yield the same return on investment as the center owned and operated by Hoffman-La Roche as a department of the company? Are there differences between on- and off-site centers, especially since they affect the overall culture of the organization and the benefits that might accrue to nonusers? What about enrollment policy? The curriculum? The length of time the center has been open?

In the area of flextime, some evidence suggests that the amount of time the program is in place matters, and that the degree of flexibility will influence the outcomes. It is not very useful to say that "flextime works" without specifying the length of the core hours and the frequency with which arrangements can be changed.

Examine groups of employees in various family and job situations. Little research has been done on the effects of divorce and subsequent single parenting, or on the impact of a company garnishing wages for child support payments. Very little data exist on problems of workers with handicapped dependents, children with drug problems, and elders in long-term care. More attention can be directed at the special needs and interactions of immigrant populations. Few studies exist on the effects of company relocations where the employee is adjusting to both a new city and a new work environment after uprooting the family. And research is particularly lacking on the work-family issues that emerge before, during and after downsizing, mergers and acquisitions.

Longitudinal Research

Research is needed that analyzes different levels of commitment to work and family roles, and the ways in which interventions work over time.

Study women employees over a period of years before and after childbirth. It is surmised by some that whatever setbacks in work occur as the result of childbearing or childrearing are temporary. While a woman may "drop out" of the workforce, it is assumed that she will return. What conditions ease the impact of parenting? Which ones exacerbate the problem?

Interactive Research

Conduct research that can integrate the effects of various company responses occurring simultaneously. Most companies pursuing family-supportive policies realize that no one solution can solve all problems faced by all employees. Since these firms tend to package several programs to address multiple needs, studying any one particular response is often difficult. For instance, how can one assert that a child care center improves productivity if flextime is introduced at the same time as the center opened?

Examine the coping strategies and vulnerabilities of employees with multiple family responsibilities. Just as companies implement multiple solutions, employees often face multiple problems. A significant number of employees have responsibilities for both old and young dependents. What is the cumulative impact of these family responsibilities, and which concerns are more important to address in the workplace?

Focus research on dual-earner families that specifically looks at the characteristics of both earners' jobs and their mutual and separate impacts on each other and the family. One researcher concluded that, "Some studies convey a sense that the dual-earner family is simply a place where two employees, one male and one female, eat dinner together every night. The lifestyle is a product of joint interest." Research could be important in shedding more light on the nature of work-family conflict, and what company responses are appropriate. Just as companies have considered the benefits received by the other working spouse, other family-supportive policies should include that focus as well.

Study the relationship between absenteeism, productivity and turnover. Does absenteeism mean less productivity? Some turnover is healthy for the organization. When work-family conflicts are implicated, is the overall impact different? What about the effects on those work measures when problems are accommodated? For instance, some union officials have criticized the on-site child care center for tying employees to a workplace they would rather leave—a case of the company reducing turnover, but not necessarily retaining a productive employee.

Visionary Research

Conduct research to surface work-family problems that will occur in an aging society. The aging of the baby boom is less than 20 years away. Older workers face concerns about retirement, pensions, work schedules, health, and transportation. But there may be problems unique to aging baby boomers. For instance, who will be the caregivers for the potentially large number of women who remain single or childless? At the other end of the age spectrum, what can business expect from the next generation of workers who have spent their early years in child care?

Conclusion

Existing research offers a benchmark for assessing the findings from future studies. By comparing findings, it is possible to see the evolution of employee expectations regarding employer attention to family concerns. Employees may have underestimated their work-family problems in early studies, because workers were concerned about admitting, even anonymously, that they were absent for family reasons. Such admissions were thought to be risky in unsupportive climates.

As work environments change and employers become more savvy about work-family issues employees, now safe when speaking up, may begin to exaggerate their problems in order to ensure a management response. Changes in employee expectations over time may yield a clearer picture of the problem, but not of the solution. As this report has shown, more evaluations of work-family programs can help strengthen the effectiveness of company responses. If companies really want to know the costs and benefits of family-supportive programs, they may not only need to become more family-supportive, but more research friendly as well.

Related Publications

Work and Family Policies: The New Strategic Plan, Research Report No. 949, 1990

Relocating Two-Earner Couples: What Companies Are Doing, Research Bulletin No. 247, 1989

Flexible Staffing and Scheduling in U.S. Corporations, Research Bulletin No. 240, 1989

A Life Cycle Approach to Family Benefits & Policies, *Perspectives* No. 19, 1989

The Countdown on Family Leave, *Perspectives* No. 18, 1989

Family-Supportive Policies: The Corporate Decision-Making Process, Report No. 897, 1987

Corporations and Families: Changing Practices and Perspectives, Report No. 868, 1985

Corporate Financial Assistance for Child Care, Research Bulletin No. 177, 1985

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The Conference Board

Report Number 974

Employee Buy-In To Total Quality

Major U.S. firms report progress on:

- *Commitment: leaders, managers, workers*
- *Involvement: communications, training and teams*
- *Reinforcement: recognition and reward*
- *Baldrige Award-readiness*

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Employee Buy-In to Total Quality:

A Corporate Progress Report

by Kathryn Troy

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About the Author

A Senior Research Associate in the Quality and Productivity Program, Kathryn Troy is the author of 16 Conference Board Reports. Her most recent include: *Quality Training: What Top Companies Have Learned; Rethinking Employment Security;* and *Employee Communications: New Top Management Priority.* She has been with the Conference Board since 1977, and is also responsible for corporate communications research.

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From the President

Pivotal to the success of a total quality management process is the willingness of workers and managers to adopt new ways of thinking and doing. Today's corporate leaders are searching for the most effective methods to engender and sustain high levels of employee commitment to customer satisfaction and continuous improvement. At the same time, senior managements are adopting human resource policies and practices which demonstrate their resolve to "go the course" with total quality, giving this process adequate time to mature. This study examines how major firms are accomplishing these tasks, how they assess their progress to date, what the obstacles have been, and what factors contribute to successful implementation of a total quality management process.

The Conference Board wishes to thank the executives who participated in this study for their generosity in providing data and observations about the trials and successes accompanying their transition from traditional management to a total quality process. Their insights will provide valuable guidance to those who have taken, or are about to undertake, a similar journey.

PRESTON TOWNLEY
President and CEO

Executive Summary

Practitioners of Total Quality Management (TQM) encourage all employees to listen to internal and external customers and to commit themselves to continuous improvement of business processes, products and services. Attention to quality predates the 1980s. But that decade was the crucible, forging corporate America's current view of TQM as a competitive wedge. The 158 firms responding to the questionnaire for this study were drawn from a universe of the nation's 1,000 largest firms. The typical participant instituted a quality management process in 1986, although a few respondents report a quality process that began in the 1970s or earlier.

For most firms, adoption of a TQM process requires a major shift in the thinking and behavior of workers and managers alike. This study takes a mid-course snapshot of companies' progress toward igniting and sustaining employee involvement in TQM.

Baldrige Award Contenders

Respondents gauge themselves as half way toward qualifying for the Malcolm Baldrige National Quality Award. In general, manufacturing firms instituted a TQM process well ahead of service firms; and manufacturers tend to rate themselves as closer to Baldrige Award-readiness. Half the manufacturers have had TQM in place for 5 years or more compared to 30 percent of service firms. A third of manufacturers say they are at least three-quarters of the way to being award-ready, compared to a quarter of service firms.

Leadership is a key Baldrige category, and executives in those firms closest to award-ready status report that they can rely on strong backing from the top of the organization. Seventy percent or more of the award-ready companies receive such support, compared with only about 25 percent of those firms rating themselves less than half way to meeting award criteria.

Worker and Middle-Management Support

Overall, participants report at least moderate levels of success with obtaining employee buy-in (i.e., commitment) to TQM. Fifty percent say that they have been moderately successful and nearly 30 percent report high levels of progress. Firms' satisfaction with their progress tends to grow as the TQM process matures.

Middle managers and first-line supervisors are most likely to withhold support for the TQM process, respondents report. Less than a quarter of firms can rely on high levels of support from these groups. In contrast, participants indicate that about half of the top ranks of management and nearly half of nonmanagerial workers are strongly supportive.

Strong leadership at the top equates with greater satisfaction with employee commitment as well as with Baldrige award-readiness. At least 70 percent of the firms that are most satisfied with the progress they have made toward employee buy-in report substantial backing at the top. These companies also can count on high levels of support at each succeeding layer. Among firms that are least satisfied with their progress, only 30 percent can count on upper layers of management for major support, and less than 10 percent have strong backing from middle managers and first-line supervisors.

Involving Employees in TQM

Most firms use employee communications, training, short-term teams and employee feedback devices such as surveys and suggestion programs to spark employee involvement in the TQM process. But those respondents who are most satisfied with their progress place greater emphasis on planned communication campaigns and quality review meetings with top management, clock more training hours, and are progressing toward use of long-term teams.

Respondents stress that all of the involvement mechanisms listed above are necessary and interdependent. However, periodic quality review meetings with top management underscore the importance of TQM, and training and teams are critical to launching and sustaining an involvement process. Training is important for culture change and skill development, and short-term teams promote immediate application of problem-solving techniques and reinforcement of group processes. Long-term teams sustain TQM and institutionalize the continuous improvement process.

Awards, Performance Measurement and Reward

To reinforce behavior and results essential to the TQM process, respondents report extensive use of quality award programs. Eighty-five percent give awards to individuals and teams, and 75 percent offer unit or plant-wide awards. Noncash awards prevail, but slightly more than 30 percent offer both cash and noncash to individuals and teams and 15 percent make both available to units or plants. Few firms offer only cash awards, but service firms are more likely to offer both options than are manufacturers.

Linking quality achievement to performance appraisal, compensation and promotion may be the ultimate test of top management's commitment to TQM. Less than half of the respondents supplying data on this practice tie compensation to promotion, but this link becomes more prevalent as the TQM process matures. Nearly 60 percent link quality to compensation and 75 percent tie quality to performance appraisal.

Overall, responses suggest that winning employee buy-in to TQM may be difficult, but can be accomplished. Participants report a wide range of successes using the TQM process. These include quantitative results in numbers of employees trained, numbers of teams meeting and measuring results, reduction in the cost of poor quality and improved customer retention, as well as qualitative gains through better communication, lower absenteeism, better supplier and labor relations, and increased employee motivation.

Method

This study targeted major corporations that have a program for managing quality in order to determine 1) how they are involving employees in the quality process, and 2) how successful their efforts have been. Managing for total quality differs from earlier corporate quality efforts such as inspection, statistical quality control or quality assurance in that it:

- is the responsibility of all employees, rather than a particular department or function;
- is aligned to needs of internal and external customers; and
- requires a continuous improvement process, applied to all business functions, products and services.

The term total quality management (TQM) is used throughout the discussion in this report. Among practitioners in quality management it is not the *only* term used, but is commonly applied when describing the current stage in the development of the corporate quality movement.* Characteristics of TQM, as it is used in this study, are reflected in the criteria for the Malcolm Baldrige National Quality Award (see Exhibit 2 on page 16).

Questionnaires for this study were mailed during the Fall of 1990 to 1,000 firms which included the 500 largest manufacturing and 500 largest service firms listed in the 1990 *Fortune* magazine ranking. A few companies of smaller size known to have a TQM process were also included. The surveys were addressed to the company's quality executive, where that name was available. The quality process is cross-functional and much of the data sought was human-resources related, thus in those firms where no quality executive was identifiable, the survey was sent to the human resources executive. In many cases, the human resources executive forwarded the survey to the quality function, and 70 percent of respondents have "quality" in their title. Although quality is everyone's responsibility, most of these firms have a designated individual or department to spearhead and/or coordinate the effort.

Responses were received from 192 firms, of which 158 reported that they had a process for managing quality (see Tables 1A and 1B). Another 13 firms will institute a process by 1992. The typical respondent among the 158 firms indicated that the company began the quality management process in 1986 and was about half way to meeting Baldrige Award criteria. Manufacturers are generally acknowledged to have instituted quality management earlier than service firms, and manufacturers account for 63 percent of the 158 responses. Tables 2 and 3 profile respondents by number of employees and financial size.

Firms that lacked a corporate-wide quality management process were asked to forward the request to a specific division or unit, if the process was in place there. Responses from parent companies constitute the majority of responses, and this is reflected in the size of the employee population, which averaged about 12,000. Tables 4A and 4B profile respondents from parent companies and other units (e.g., subsidiaries, divisions, etc.) by industry and employee size.

Study data are intended to reflect central tendencies among large U.S. firms that have a total quality management process in place. The TQM process is still in its initial stages in many of these firms, and several respondents indicated that their replies were "best estimates." In some report tables, especially in the service industry, the number of responses is small and inferences are necessarily tentative. Nevertheless, the data are valuable as a baseline which further Conference Board research will expand and refine.

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* For additional information on the evolution of the corporate quality movement, see David A. Garvin, "Managing Quality." *The Free Press*, New York, 1987.

Method Table 1A: Number and Percent of Respondents With Quality Management Process (Grouped by Industry)

	All Survey Respondents	*No. with Quality Mgmt. Process*	*% with Quality Mgmt. Process*
Manufacturing:			
Durable Goods	57	55	96%
Nondurable Goods	49	44	90
Total Manufacturing	106	99	93
Service:			
Financial Services	35	20	57
Other Services	51	39	76
Total Services	86	59	69
Total (All Companies)	192	158	82%

Method Table 1B: Industry Distribution of Respondents With Quality Management Process (Grouped by Industry)

	Number	*Percent*
Manufacturing:		
Durable Goods	55	55%
Nondurable Goods	44	44
Total Manufacturing	99	63
Service:		
Financial Services	20	34
Other Services	39	66
Total Services	59	37
Total (All Companies)	158	100%

Method Table 2: Size of U.S. Employee Population in Participating Companies (Grouped by Industry)

		U.S. Employee Population				
	Number With Quality Management Process	*2,000 or Less*	*2,001-5,000*	*5,001-15,000*	*15,001-30,000*	*30,001+*
Manufacturing:						
Durable Goods	55	6%	14%	33%	22%	25%
Nondurable Goods	43	16	26	26	16	16
Total Manufacturing	98	11	19	30	19	21
Service:						
Financial Services	20	20	20	30	20	10
Other Services	38	11	8	34	18	29
Total Services	58	14	12	33	19	22
Total (All Companies)	156	11%	17%	31%	19%	22%

Method Table 3: Financial Size of Participating Companies (Grouped by Industry*)

	Financial Size in billions (1989)							
	Sales (N= 111)				*Assets (N=21)*		*Operating Revenue (N=24)*	
	Under $1	*$1-5*	*$5-10*	*$10 & Over*	*Under $6*	*$6 & Over*	*Under $3*	*$3 & Over*
Manufacturing:								
Durable Goods	27%	38%	22%	13%	–	–	–	–
Nondurable Goods	32	41	11	16	–	–	–	–
Total Manufacturing	29	39	17	14	–	–	–	–
Service:								
Financial Services	–	–	–	–	40%	60%	–	–
Other Services	50	8	33	8	100	–	38%	62%
Total Services	50	8	33	8	43	57	38	62
Total (All Companies)	32	36	19	14	43	57	38	62

* Financial services firms were asked for assets; transportation and utilities firms for operating revenues; and all others for sales revenue.

Method Table 4A: Participation by Parent Companies and Business Units/Subsidiaries (Grouped by Industry)

	Number of Companies	*Parent Company*	*Company Subsidiary/Unit*	*Company Without Subsidiary/Unit*
Manufacturing:				
Durable Goods	55	65%	33%	2%
Nondurable Goods	44	77	21	2
Total Manufacturing	99	71	27	2
Service:				
Financial Services	20	55	45	0
Other Services	39	56	33	10
Total Services	59	56	37	7
Total (All Companies)	158	65%	31%	4%

Method Table 4B: Participation by Parent Companies and Business Units/Subsidiaries
(Grouped by Size of Employee Population)

	Number of Companies	*Parent Company*	*Company Subsidiary/Unit*	*Company Without Subsidiary/Unit*
Number of U.S. Employees				
2,000 and Less	18	39%	56%	6%
2,001 – 5,000	26	58	35	8
5,001 – 15,000	48	65	31	4
15,001 - 30,000	30	70	27	3
30,001 +	34	82	18	0
Total	156	65	31	4

Who's Ready for Involvement?

Today's corporate workers and managers must grapple with a major transformation in the way in which they operate. The protocols of the manager-subordinate relationship are shifting. Companies are discarding organization charts or turning them upside down, and are reassessing guidelines for performance measurement and rewards. More workers are taking part in job-related decision-making and priority setting. Work rules and schedules are gaining a new flexibility.

Such change is welcomed by some employees, but resisted by others. To shape the corporation into a viable competitor for the 1990s marketplace, top management must spark the involvement of all employees—managers and workers—both in the process of change and its outcomes. Buy-in, or commitment to change, participation, ownership and empowerment have become watchwords in the workplace of the 1990s.

The Involvement Factor

Half of the respondents to this study report that they have been moderately successful in engaging managers and workers in a major internal change—the introduction of a total quality management process (TQM). Firms in the United States began adopting TQM in the late 1970s. The trend quickened during the 1980s, often in response to competitive threats from foreign companies. Only 16 percent of survey respondents instituted the TQM process prior to 1983, while nearly 60 percent have done so since 1986. Manufacturers of durable goods report the oldest TQM process, firms delivering non-financial services, report the newest (see Table 1).

Managing for total quality requires that all employees identify their internal and external customers and attune themselves to satisfying the needs of these constituencies. Employees commit themselves to a goal of continuous improvement, striving to do each work task or process the right way the first time and every time. As a quality culture takes hold, employees are encouraged to participate in decisions affecting their work, and teams become the typical organizational unit. Functional lines are blurred as workers and managers cut across traditional boundaries and focus on work as a process.

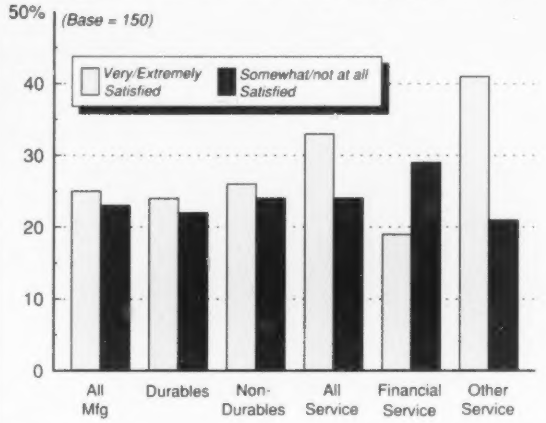
Such a departure from traditional workplace organization and practice generally requires a long-term commitment to ensure its success. For example, the top quality executive at Corning Incorporated traces his firm's program through three stages: "Start-up," the

Table 1: Age of TQM Process (Grouped by Industry)

		TQM in Place for:			
	Number of companies	*8 years or more*	*5-7 years*	*2-4 years*	*1 year or less*
Manufacturing	92	18%	33%	33%	16%
Durable Goods	51	27	31	31	10
Nondurable Goods	41	7	34	34	24
Service	54	13	17	41	30
Financial Services	17	23	23	47	6
Other Services	37	8	13	39	40
Total (All Companies)	146	16	27	36	21

Chart 1

Progress Toward Involving Employee in TQM



first stage, began in 1983 and extended through 1986. It had an inward focus on self-examination. "Breakout," the second stage, occurred when the company reached out to form partnerships with customers, coworkers and suppliers; it extended from 1986 to 1989. The firm now sees itself in a "world class" third stage, as it focuses on best practices, aspires to delighting the customer and moves beyond short-term teams to self-managed teamwork[1] (see Exhibit 1).

Given a multistage timetable for fully realizing TQM, it is not surprising that more than 20 percent of the respondents are only "somewhat" or "not at all" happy with their progress toward involving employees in the process. Manufacturers of durable and nondurable goods share similar assessments of progress-to-date, but financial service firms are much less likely to be highly satisfied than are other service providers (see Chart 1). Among firms with a process of seven-years-old or younger, the longer the TQM process has been in place, the greater their success in involving employees. However, the group of firms with the oldest TQM process—8 years or more—diverge from this pattern (see Table 2 and box above).

Out of Steam?

Part of the explanation for the variation from the pattern of satisfaction among firms with the oldest TQM processes may be tied to the make-up of this category. Made up of 20 firms, it is the smallest and, based on age of the quality management process, the most heterogeneous of the groups. Some date their quality process back to the 1970s and beyond. The group may simply be atypical.

However, since quality practitioners sometimes suggest that older TQM programs can run out of steam, the experience of seven firms encountering negative attitudes may be instructive. Comments from these firms do not vary greatly from those by executives whose TQM implementation is more recent. The significance may lie in the fact that certain problems *persist*.

In some of the seven firms, the difficulties arose from special circumstances such as downsizing, a need for capital and new equipment, or union difficulties. But several companies report that workers and employees continue to sense a dichotomy between the short-term focus on profit and results and long-term TQM goals. "There are mixed messages," says a manufacturer. "Management is saying we want more production and 'oh, by the way' quality." Another obstacle is a lack of understanding of the need for a new way of working. "Our company has been extremely successful for over 50 years, so there is a strong reluctance to change" notes a respondent from a durable goods producer whose TQM process started in 1982.

Table 2: Involving Employees in TQM: Satisfaction With Progress (Grouped by Age of TQM Process)

		Level of Satisfaction		
	Number of companies	*High/Very High*	*Moderate*	*Low/Very Low*
Years TQM Process in Place				
8 years or more	20	30%	35%	35%
5 – 7 years	36	36	50	14
2 – 4 years	50	26	58	16
1 year or less	27	22	48	30
Total (All Companies)	133	29%	50%	21%

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[1] David B. Luther, "Continuous Quality Improvement: The Ever-Widening Network," *Total Quality Management*, The Conference Board, Report No. 963, 1991.

Exhibit 1: Corning Incorporated—TQM Milestones

Since the past is visualized most readily in important events or actions, we can use a series of them to trace where we've been:

A **Quality Institute**, established in Corning, New York, opened its doors on a January weekend in 1984. The company's senior executives were in the first class. The Institute served as the company's central resource for a worldwide training network with facilities in 58 locations, teaching in six languages.

Quality Milestones: The end of 1984 saw the first of the Quality Milestones, annual two-day meetings in Corning, New York, in which Quality Improvement Teams from all locations share experiences and ideas. Starting in 1988, external customers were invited as well.

Climate Survey: In 1984, a Corporate Climate Survey asked all of Corning's North American employees for the first time what they thought about their jobs, their company, and their futures. Other Climate Surveys followed—as did management's response to issues raised, including organizational changes to encourage employee involvement in planning and decision-making, a performance-oriented compensation system, and more extensive career planning.

Our Values: A 1985 corporate statement of Values, distributed and discussed throughout the company, listed Quality first. (The other Values are Integrity, Performance, Leadership, Technology, Independence and The Individual.)

The Vital Few: In 1985, the Management Committee introduced the concept of the Vital Few. Implemented at the unit level, a Vital Few concentration helps identify rank, and eliminate error sources. The chairman emphasized it this way: "Decide on your top three vital issues. Pick one. Remove it. Permanently."

Goals: 1986 marked the establishment of three special five-year goals. They are:

- By 1991, increase employee job training for meeting job requirements to a company-wide average of five percent of time worked.
- By 1991, achieve a 90 percent reduction in the most critical errors preventing the attainment of Total Quality in products, processes and services.
- By 1991, the first-day quality of new goods and services will meet customer requirements and will be equal to, or better than, the quality of competitive products or the quality of the Corning products being replaced.

National Quality Month in 1987 was chaired by Corning's chairman marking the first major national exposure of Corning as a company using quality as a specific competitive strategy.

Delighting the Customer: 1987 also brought about a needed insight. Tom Peters, author of *In Search of Excellence*, spoke at the company's Quality Milestone and asked if we were "delighting the customer." Some soul-searching told us "no"—we were focused too heavily on our internal processes. A major change in emphasis began.

By 1988, Total Quality skills were accumulating and participation soaring. The company-wide focus on customer satisfaction and customer-driven results sharpened, and the linchpins of continuous quality improvement began to move into place. At a glance there were:

Benchmarking: the process of rigorously comparing parts or all of a Corning product, service, or function against the best in the marketplace.

Process Management Approach: a technique for improving the management of processes in non-manufacturing environments. The approach helps identify the boundaries of an administrative process, its inflow and outflow, and its measures of effectiveness.

Service Quality (Customer Action Planning System): a series of workshops teaching that the quality of service that accompanies a product is as important as the product itself. They stress reliability, responsiveness, and even empathy—"experiencing the feelings of the customer."

Customer/Supplier Partnerships: a new way to understand and meet customer requirements. In structured meetings, teams of Corning employees and customers or suppliers meet to describe, debate, understand, and reach agreement on what the requirements are.

Union-Management Quality Reviews: sessions involving approximately 15 different employees each time, led by teams of union officials and Corning managers. The purpose is to hear and understand what our people say about our progress toward Total Quality.

Workplace Partnerships: a mutual recognition by Corning and the American Flint Glass Workers' union that their shared objectives cannot be achieved unless a true partnership exists. While endorsing the continuation of their traditional collective bargaining relationship, the two parties in early 1989 forged a new partnership. It states, in part, "In fostering this process, trust, communication and respect for the dignity of the individual are absolutely essential."

The Malcolm Baldrige National Quality Award: awarded each year by the President to a maximum of six companies in the U.S. for quality excellence. Corning's Telecommunications Products Division, with some of its complex optical-fiber processes running at zero parts per million in defects, was the company's entry in 1989, and received a site visit by senior examiners. The award's criteria are now Corning's template for world-class quality, corporate-wide.

Source: *Corning Total Quality Digest.*

Buying In and Holding Out

Survey respondents were asked to what degree nonmanagers and managers have been supportive to TQM and whether negative attitudes in either group were an obstacle. Groups at the top and bottom of the organization—the most senior executives and nonmanagement employees—are seen as most supportive. Between 45 and 55 percent of respondents indicate that support from these groups is high. Nevertheless, those at the top are not spared criticism: "Senior executives resist change for themselves, protect turf, and think others are the ones who need change," says a participant from a utility.

Support at the Top

Survey results suggest that high levels of support at the top of the organization can have a major impact. Of those respondents who are "very/extremely" satisfied with their progress toward involving employees, nearly 90 percent say that top management (e.g., CEO, COO, executive committee members) support is high. Roughly 70 percent say support is high at the next level (e.g., senior managers, vice president, senior vice president). Those who are only "somewhat" or "not at all" satisfied offer a marked contrast: Only about 30 percent have significant backing from top management and just 25 percent have such support from senior managers (see Table 3). Not surprisingly, less than 10 percent of the dissatisfied group report strong support for TQM at the next two layers, middle management and first-line supervisors, and only 25 percent have an enthusiastic response from workers. Those reporting strong support at the top have a better record with each succeeding layer.

Table 3: Satisfaction With Progress Toward Involving Employees in TQM (Grouped by Level of Support from Managers and Nonmanagers)

A. Respondents *Very/Extremely Satisfied* (N=40)

Level of Support For TQM is:	*High*	*Moderate*	*Low*
Among:			
Top management	87%	13%	0%
Senior managers	68	28	4
Middle managers	37	53	10
First-line supervisors	25	60	15
Nonmanagers	60	36	4

B. Respondents *Moderately Satisfied* (N=70)

Level of Support For TQM is:	*High*	*Moderate*	*Low*
Among:			
Top management	47%	43%	10%
Senior managers	41	54	6
Middle managers	17	62	20
First-line supervisors	30	56	14
Nonmanagers	54	40	6

C. Respondents *Somewhat/Not at All Satisfied* (N=32)

Level of Support For TQM is:	*High*	*Moderate*	*Low*
Among:			
Top management	29%	39%	32%
Senior managers	25	34	41
Middle managers	6	47	47
First-line supervisors	9	50	41
Nonmanagers	26	58	16

Resistance at the Middle

Although over half of the respondents consider middle managers and first-line supervisors at least moderately supportive, buy-in among these groups is a major obstacle to implementing TQM in many firms. Only about 20 percent of manufacturers can count on strong support from the middle layers of the organization. Financial service firms are least likely of all industry groups to have middle managers who are "highly" supportive of TQM. Other service firms (e.g., utilities, retailers, transportation) appear to have a less severe problem with these managers (see Charts 2A and 2B). Respondent comments suggest some of the obstacles:

- "Middle managers are initially uneasy in the new management style (preventing problems not solving them)."

  — *insurance company vice president*

- "There is a lack of middle management commitment; quality must be embedded in performance appraisal."

  — *a banker*

- "Middle managers are being asked to review the values of their department and their jobs. They have *other* problems to contend with."

  — *a quality executive in a chemical firm*

First-line supervisors also lack enthusiasm for TQM—among other concerns, they find "time and resource management difficult," notes the quality director of a utility. Overall, the issue is not one of control, but a "resistance to a perceived (and often real) loss of power," says the senior vice president, quality, at a transportation service firm.

Accompanying lukewarm support among some managers are negative attitudes and general skepticism

Chart 2A

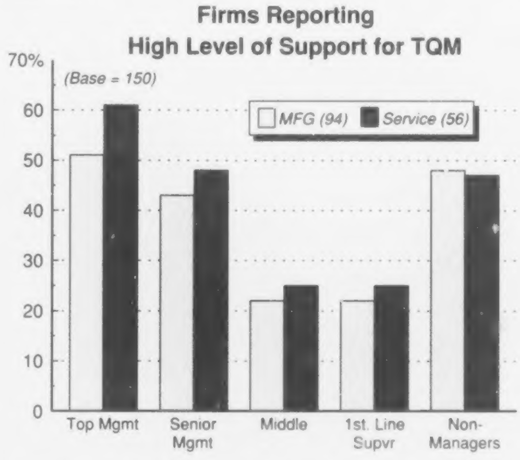
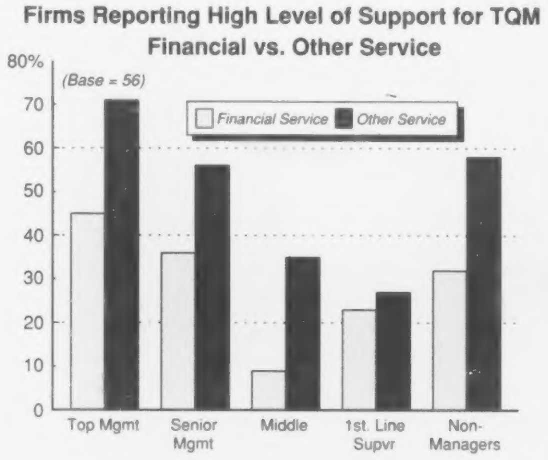


Chart 2B



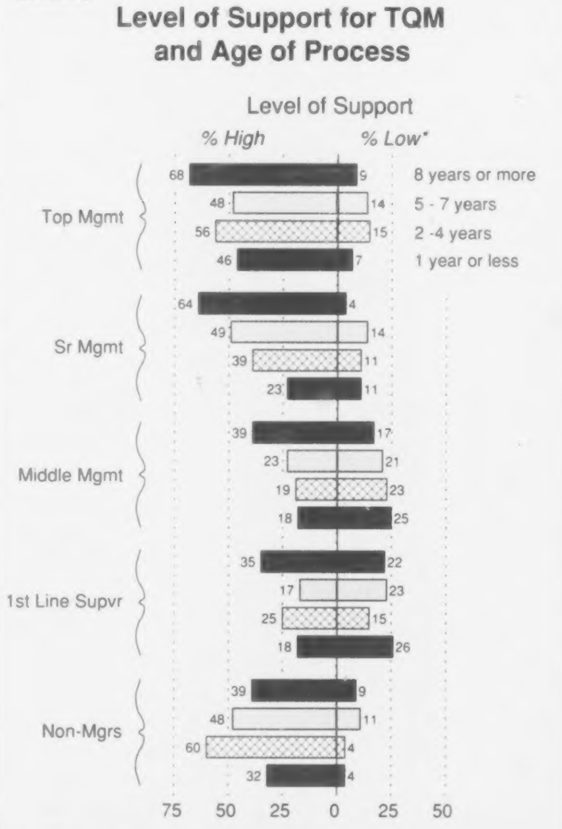
about top management's motives and long-term resolve. Forty percent of respondents report that negative attitudes toward quality hamper implementation to a great or very great degree. This is the case in more than half of firms manufacturing nondurable goods. Says a food company executive: "There is skepticism about whether we really want to change. There are turf issues or conflicting goals between entities within the organization. Internal systems don't drive the effort."

Although nonmanagerial workers may not embrace TQM immediately, respondents in almost half the firms report that they can count on a high level of support from this group. Only about 15 percent of firms report that negative attitudes among nonmanagement employees have a major impact on implementing TQM. To the extent that such attitudes exist, they are characterized as the "this too shall pass" or "TQM is the program of the year" syndrome. Top and middle managers tend to become more supportive over time, but as Chart 3 indicates, the passage of time does not guarantee the acceptance of TQM at every level. The pattern among nonmanagers and first-line supervisors is uneven. In fact, results from the oldest TQM programs hint at a slightly more pronounced tendency toward negative attitudes among both managers and nonmanagers than is the case when TQM is of newer vintage (see box on page 12). The older group was also somewhat less satisfied with its progress in involving employees in TQM (see Table 2).

Keeping Score

If success in promoting buy-in to TQM requires more than the passage of time and support from the top, what other factors produce results? Respondents were asked about the steps they have taken to involve employees in TQM and to reinforce employees' quality achievement. Their responses are analyzed in subsequent parts of this report. The factors examined are communication, training, team participation, employee recognition and performance measurement/reward. These align with key criteria in the "leadership" and "human resource utilization" categories used by examin-

Chart 3



*Companies responding "moderate" are excluded.

ers for the Malcolm Baldrige National Quality Award (see Exhibit 2).

A Self-Assessment

Respondents were asked for a self-assessment of their progress toward Baldrige Award-readiness. Using past winners of the award to mark the 90 to 100 percent level, or "world class," participants scored themselves on a scale of 1 to 100. Several respondents noted that it was difficult to supply an accurate self-rating since company divisions started TQM at different times, and experienced varying degrees of success. Not surprisingly, a third of firms with company-wide TQM see themselves in the top quartile, in contrast to about a fifth of those with less comprehensive efforts.

Many respondents report using the Baldrige criteria as an internal assessment tool, but some stressed that they do not consider themselves ready to apply for the award. "Our focus will be to achieve our corporate quality goals; the award is a far distant secondary goal," a respondent from a service firm said. Several firms noted that at least one corporate division may be ready to apply soon, while other companies report that they have already applied and have found the feedback helpful.

Overall, firms with more mature TQM processes tend to give themselves higher ratings. Half of the firms with a TQM process 5-to-7-years-old gauge themselves as at least three quarters of the way to award status, as do 40 percent of firms with the oldest TQM process. Only about 10 percent of the those with the most recent TQM process make this claim (see Table 4).

Firms in the manufacturing sector and companies with very large employee populations are more likely to report award-readiness. Among manufacturers, a third say they are in the top quartile, compared to a quarter of service firms (Chart 4A). Three-quarters of producers of durable goods see themselves as at least half way toward qualifying, while nonfinancial service firms are the most likely to place themselves below the halfway

Exhibit 2

Malcolm Baldrige National Quality Award

	1991 Examination Categories/Items		*Maximum Points*
1.0	**Leadership**		**100**
1.1	Senior Executive Leadership	40	
1.2	Quality Values	15	
1.3	Management for Quality	25	
1.4	Public Responsibility	20	
2.0	**Information and Analysis**		**70**
2.1	Scope and Management of Quality Data and Information	20	
2.2	Competitive Comparisons and Benchmarks	30	
2.3	Analysis of Quality Data and Information	20	
3.0	**Strategic Quality Planning**		**60**
3.1	Strategic Quality Planning Process	35	
3.2	Quality Goals and Plans	25	
4.0	**Human Resource Utilization**		**150**
4.1	Human Resource Management	20	
4.2	Employee Involvement	40	
4.3	Quality Education and Training	40	
4.4	Employee Recognition and Performance Measurement	25	
4.5	Employee Well-Being and Morale	25	
5.0	**Quality Assurance of Products and Services**		**140**
5.1	Design and Introduction of Quality Products and Services	35	
5.2	Process Quality Control	20	
5.3	Continuous Improvement of Processes	20	
5.4	Quality Assessment	15	
5.5	Documentation	10	
5.6	Business Process and Support Service Quality	20	
5.7	Supplier Quality	20	
6.0	**Quality Results**		**180**
6.1	Product and Service Quality Results	90	
6.2	Business Process, Operational, and Support Service Quality Results	50	
6.3	Supplier Quality Results	40	
7.0	**Customer Satisfaction**		**300**
7.1	Determining Customer Requirements and Expectations	30	
7.2	Customer Relationship Management	50	
7.3	Customer Service Standards	20	
7.4	Commitment to Customers	15	
7.5	Complaint Resolution for Quality Improvement	25	
7.6	Determining Customer Satisfaction	20	
7.7	Customer Satisfaction Results	70	
7.8	Customer Satisfaction Comparison	70	
TOTAL POINTS			**1000**

Source: *1991 Guidelines*, Malcolm Baldrige National Quality Award.

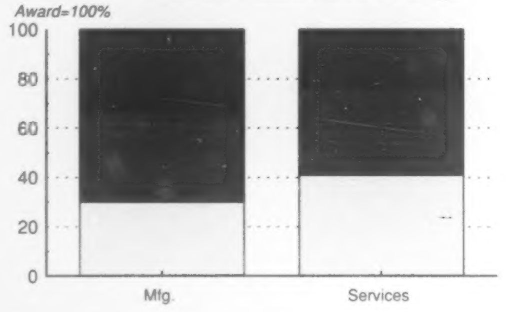
Table 4: Baldrige Award Self-Rating (Grouped by Age of TQM Process)

		Self-Rating on Baldrige Award-Readiness		
	Number of Companies	*Less than half way*	*Half to 75% of way*	*Almost there (75-100% of way)*
Years TQM Process in Place				
8 years or more	22	9%	50%	41%
5 – 7 years	35	14	34	51
2 – 4 years	48	50	31	19
1 year or less	28	54	36	11
Total (All companies)	133	35%	36%	29%

Chart 4A

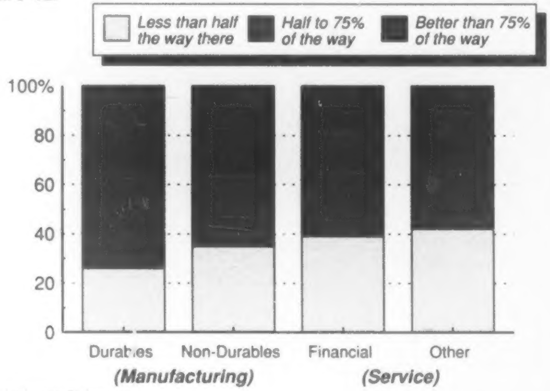
Progress Toward Baldrige Award

Manufacturers Have an Edge



Note: Base=144 Companies

Chart 4B *



* By Industry Subgroup

mark (Chart 4B). Based on employee size, the largest firms report more progress than the smallest, but there is some variation in the patterns among the midsize firms (Table 5). Respondents' self-assessment, as well as the number of years their TQM process has been in place, are key indicators used in the analysis of firms' progress toward promoting buy-in presented in subsequent sections of this report.

Table 5: Baldrige Award Self-Rating (Grouped by Size of Employee Population)

		Self-Rating on Baldrige Award-Readiness			
	Number of Companies	*Median Baldrige Self-Rating*	*Less Than Half Way*	*Half to 75% of Way*	*75-100% of Way*
Number of Employees					
2,000 or less	16	40%	56%	25%	19%
2,001 – 5,000	23	50	35	35	30
5,001 – 15,000	44	58	29	41	29
15,001 – 30,000	27	50	44	30	26
30,001 or more	32	70	15	44	40
Total	142	50	33	37	30

Creating an Involvement Mechanism

Anecdotal comments from corporate quality executives reinforce study findings: Successful implementation of TQM is usually initiated at the top of the organization and requires continuing top management involvement.[2] As the "roll out" of the TQM from the top cascades through intermediate management layers to workers, the objective is to persuade each level to take ownership of the process. Ultimately, TQM becomes part of the corporate culture. Company strategies for initiating TQM vary, but there are several tactics that are common to the implementation phase:

- Meetings of top managers are called to launch the process.
- Special communications are prepared to inspire managers and employees to inform them of the new organizational thrust.
- Training programs are organized to build quality awareness, stress customer satisfaction, and ultimately to teach problem solving, Pareto analysis, statistical process control and other quality tools.
- Teams and task forces are formed to engage managers and employees in the processes of identifying obstacles to TQM implementation and creating more effective ways to manage work processes, eliminate errors and institute a continuous improvement process.
- Surveys, focus groups and suggestion systems are used to stimulate bottom-up communication and to encourage employees and managers to offer new ideas and uncover problems. Communication audits may be carried out in order to better understand how managers and employees transmit and receive information—upward, downward and laterally.

Table 6 and Chart 5 show how participants in this survey launched their communications campaign for TQM and the involvement techniques they currently employ.

Based on respondents' Baldrige award self-rating, those firms scoring themselves at or above the halfway mark place more emphasis on planned use of communication media than do those in the lower half of the ranking. They are also more likely to have such involvement techniques as teams, periodic quality review

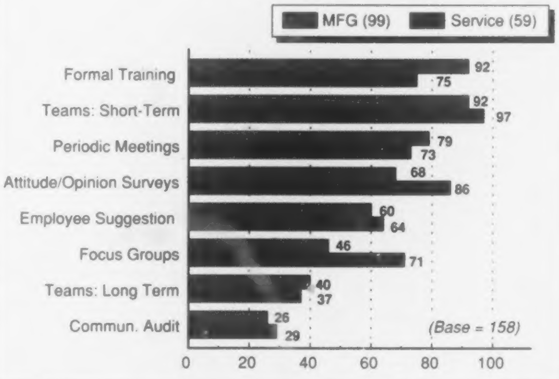
Table 6: Using Communications to Launch a Quality Process

Communications Vehicle		*Percent Using (N=158)*
Special meetings with top management		89%
Large scale	26%	
Small scale	37	
Both	36	
Company periodicals		85
Articles/features	57	
Special issue/edition	3	
Both	43	
Management letters/memos focused on quality		82
Company videos/slide shows		77
Other special brochures/ publications		44

Chart 5

Techniques for Involving Employees in TQM

(% Using Techniques)



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[2] Lawrence Schein, *The Road to Total Quality: Views of Industry Experts*, The Conference Board, Research Bulletin 239, 1990.

Table 7: Involvement Techniques and Baldrige Award Self-Rating (N=144)

	Baldrige Self-Rating		
	Almost there (75% or more)	*Half way to 75%*	*Less than Half way*
Periodic meetings with top management			
Have now*	93%	79%	52%
Plan soon	5	8	29
Formal training program			
Have now	93	83	78
Plan soon	–	14	20
Short-term teams			
Have now	93	88	86
Plan soon	–	4	12
Long-term teams			
Have now	60	42	20
Plan soon	12	36	41
Employee feedback:			
Surveys			
Have now	77	65	65
Plan soon	12	17	25
Communications Audits			
Have now	33	21	22
Plan soon	23	23	29
Focus groups			
Have now	65	54	37
Plan soon	7	10	18
Employee suggestion program			
Have now	65	65	45
Plan soon	16	15	26

** Have in 1990; plan by 1993.*

meetings with top management, suggestion programs and other employee feedback devices (see Table 7). More than 90 percent of the firms placing themselves near Baldrige award-readiness have formal training and clock a median of 18 hours annually for managers and 10 for nonmanagers. This compares to 8 hours for managers and 7 for nonmanagers among firms less than half way to the Baldrige goal.

Communicating TQM

To dramatize top management's commitment to quality and the high priority it assigns to TQM, 90 percent of the firms use two-way communication—large and/or small group meetings—to initiate the change process. The first meeting might involve only the most senior managers. The objectives are to set TQM goals and strategies and to agree on what messages will be delivered throughout the organization.

The actual launch of TQM then takes place at a larger management meeting. Many firms take this opportunity to showcase presentations from top executives and quality experts. Videos are a popular start-up tool in three-quarters of the firms; often used to build quality awareness or outline the major steps in implementing TQM, videos may be featured at the kick-off meeting and then folded into a kit of materials for attendees. Managers bring the kit back to their units and in smaller meetings, introduce the process to their direct reports, who then carry the message to succeeding layers. Meeting strategies vary. Twenty-five percent of the firms run only large scale meetings; roughly 35 percent use only small scale meetings, and about the same proportion organize meetings of both sizes.

Print materials supplement and reinforce the launch of TQM. Fully 85 percent of respondents use the company periodical to deliver quality messages as part of the TQM roll-out. Of this group, nearly 60 percent depend on articles and features in the regular edition to deliver the quality message, but 40 percent use a special edition of the publication as well. Management letters and memos are part of the launch in over 80 percent of the firms, and about 50 percent of the respondents use other special brochures or print materials, such as posters.

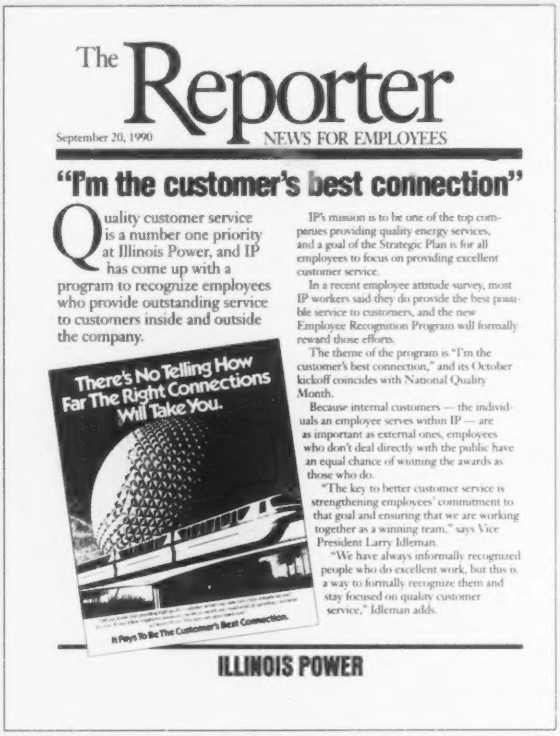
A Continuing Effort

Just as communication is crucial to the launch of the quality process, it is essential to sustaining and improving the quality process over time. Exhibit 3 on pages 20-21 illustrates the range of printed materials respondents have developed: special brochures, posters, newsletters and magazines are among them.

Respondents were asked what media were used to reach employees with a message about quality during a recent year (1989). The results point to print as the prime vehicle—90 percent use a company periodical to reach all employees, typically on a monthly basis. Nearly half the respondents use a periodical to target specific quality messages to management employees. Such communiques occur about 5 to 6 times annually. Three-quarters of the firms generate messages through management letters and memos, at the frequency of about 4 per year. A healthy majority (60 percent) develop one or two special publications or brochures annually. Videos are similarly popular and are also issued about twice annually. Companies are still developing the capability to communicate with employees electronically, but 20 percent of the firms include items on quality in their electronic newsletter on a monthly basis.

Face-to-face meetings are likely to be ongoing, as firms establish teams and task forces to implement TQM. Half the respondents also hold company-wide rallies or conferences—"Quality Day"—at least annually. Such meetings recognize employee achievement, reinforce the company's commitment to quality, and promote employee buy-in to the quality process.

Exhibit 3: Communicating With Employees



The Reporter

September 20, 1990

NEWS FOR EMPLOYEES

"I'm the customer's best connection"

Quality customer service is a number one priority at Illinois Power, and IP has come up with a program to recognize employees who provide outstanding service to customers inside and outside the company.

IP's mission is to be one of the top companies providing quality energy services, and a goal of the Strategic Plan is for all employees to focus on providing excellent customer service.

In a recent employee attitude survey, most IP workers said they do provide the best possible service to customers, and the new Employee Recognition Program will formally reward those efforts.

The theme of the program is "I'm the customer's best connection," and its October kickoff coincides with National Quality Month.

Because internal customers — the individuals an employee serves within IP — are as important as external ones, employees who don't deal directly with the public have an equal chance of winning the awards as those who do.

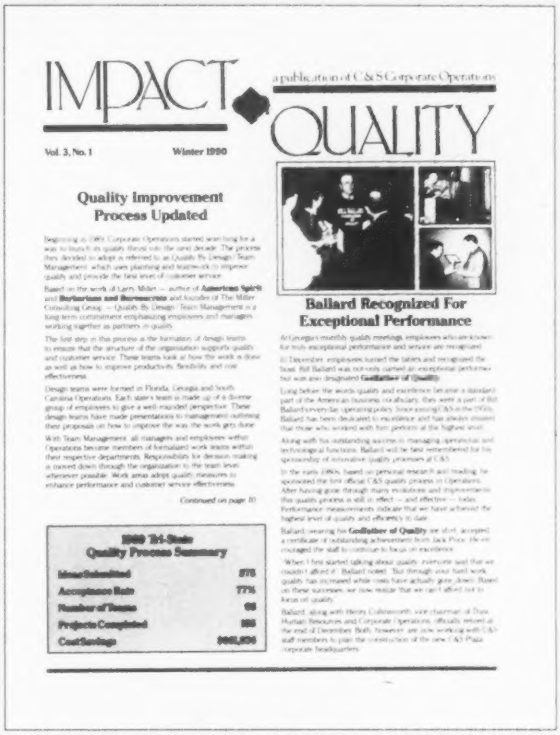
"The key to better customer service is strengthening employees' commitment to that goal and ensuring that we are working together as a winning team," says Vice President Larry Idleman.

"We have always informally recognized people who do excellent work, but this is a way to formally recognize them and stay focused on quality customer service," Idleman adds.

There's No Telling How Far The Right Connections Will Take You.
It Pays To Be The Customer's Best Connection.

ILLINOIS POWER

Illinois Power



IMPACT ◆ QUALITY

a publication of C&S Corporate Operations

Vol. 3, No. 1

Winter 1990

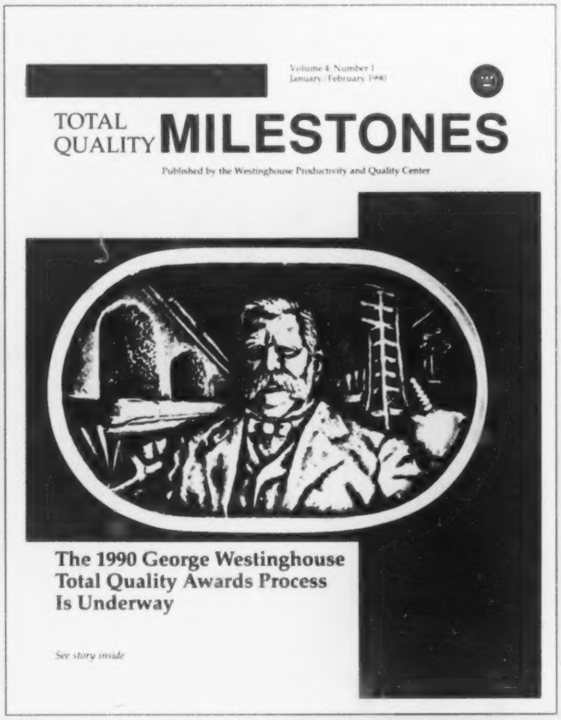
Quality Improvement Process Updated

Continued on page 10

[illegible] Tri-State Quality Process Summary	
Ideas Submitted	[illegible]
Acceptance Rate	[illegible]
Number of Teams	[illegible]
Projects Completed	[illegible]
Cost Savings	[illegible]

Ballard Recognized For Exceptional Performance

C & S Bank



Volume 4, Number 1
January/February 1990

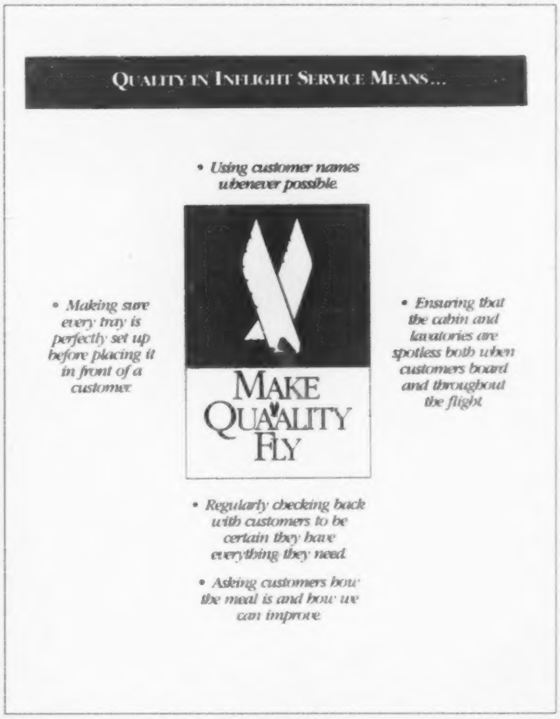
TOTAL QUALITY MILESTONES

Published by the Westinghouse Productivity and Quality Center

The 1990 George Westinghouse Total Quality Awards Process Is Underway

See story inside

Westinghouse Corporation

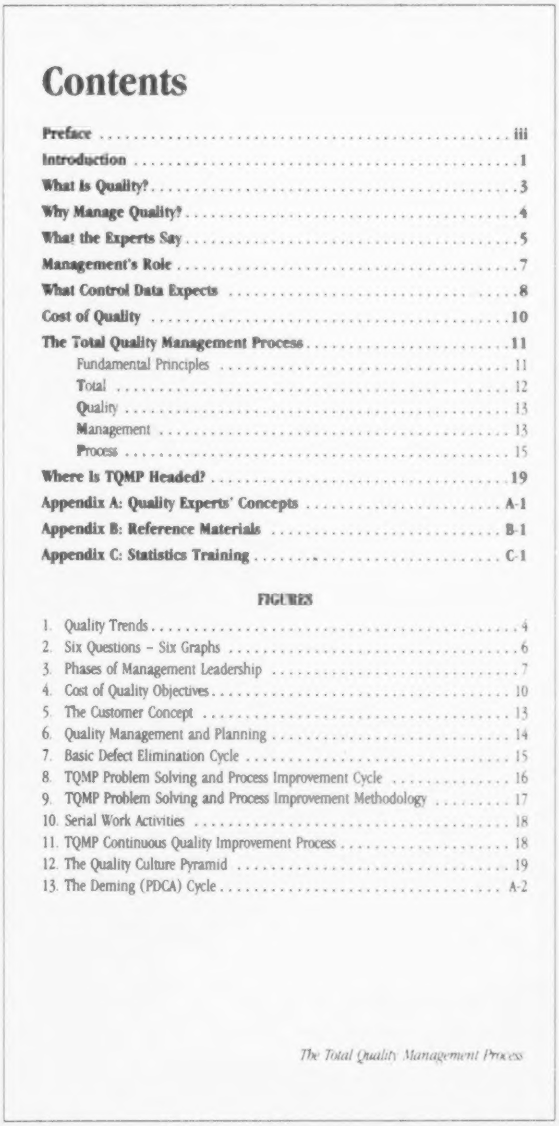


QUALITY IN INFLIGHT SERVICE MEANS...

- *Using customer names whenever possible.*
- *Making sure every tray is perfectly set up before placing it in front of a customer.*
- *Ensuring that the cabin and lavatories are spotless both when customers board and throughout the flight.*
- *Regularly checking back with customers to be certain they have everything they need.*
- *Asking customers how the meal is and how we can improve.*

American Airlines

Control Data Corporation



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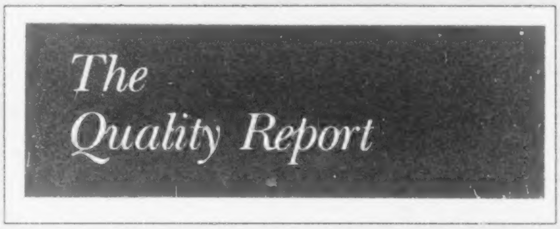
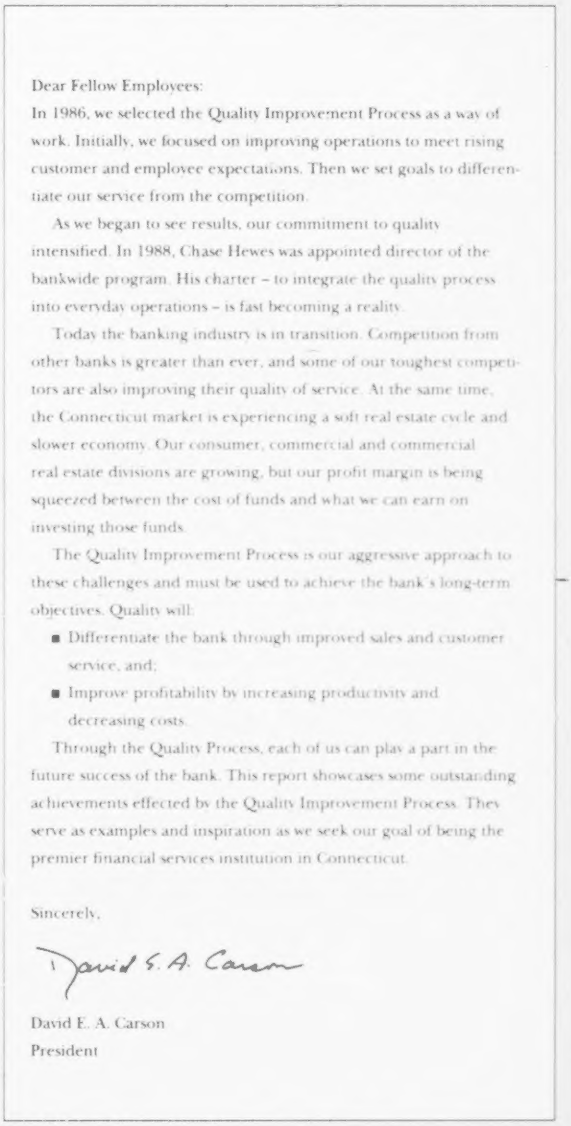
The Total Quality Management Process

People's Bank, Connecticut



The Quality Report



Dear Fellow Employees:

In 1986, we selected the Quality Improvement Process as a way of work. Initially, we focused on improving operations to meet rising customer and employee expectations. Then we set goals to differentiate our service from the competition.

As we began to see results, our commitment to quality intensified. In 1988, Chase Hewes was appointed director of the bankwide program. His charter – to integrate the quality process into everyday operations – is fast becoming a reality.

Today the banking industry is in transition. Competition from other banks is greater than ever, and some of our toughest competitors are also improving their quality of service. At the same time, the Connecticut market is experiencing a soft real estate cycle and slower economy. Our consumer, commercial and commercial real estate divisions are growing, but our profit margin is being squeezed between the cost of funds and what we can earn on investing those funds.

The Quality Improvement Process is our aggressive approach to these challenges and must be used to achieve the bank's long-term objectives. Quality will:

- Differentiate the bank through improved sales and customer service, and;
- Improve profitability by increasing productivity and decreasing costs.

Through the Quality Process, each of us can play a part in the future success of the bank. This report showcases some outstanding achievements effected by the Quality Improvement Process. They serve as examples and inspiration as we seek our goal of being the premier financial services institution in Connecticut.

Sincerely,

David E. A. Carson

David E. A. Carson
President

As Tables 8 and 9 suggest, there are some variations by company size and industry in how companies mobilize media to meet their quality communication goals. In general, the larger the employee population, the greater the likelihood that the firm will use one of the communications vehicles discussed above. Also, larger firms are more disposed to mobilize media as part of a planned campaign than are smaller companies. By industry, firms in durable goods and financial services are less likely to use videos as part of a campaign than are

Table 8: Communicating the Quality Message[a] (Grouped by Size of Employee Population)

	Communication Vehicles Used					
	Articles in Company Periodicals Target:		*Letters/Memos From Top Management*	*Videos/ Slide Shows*	*Special Publications/ Brochures*	*Company-wide Conferences/ Rallies*
	All Employees	*Managers Only*				
Use Vehicle (N=156)						
2,000 or less	83%	39%	67%	50%	44%	44%
2,001 – 5,000	85	27	69	54	61	35
5,001 – 15,000	96	48	79	65	56	50
15,001 – 30,000	93	50	73	63	60	57
30,001 or more	91	56	85	79	76	62
Use is Occasional[b]						
2,000 or less	73%	71%	83%	67%	50%	50%
2,001 – 5,000	54	57	94	50	69	22
5,001 – 15,000	50	65	84	58	48	29
15,001 – 30,000	50	60	77	42	67	47
30,001 or more	45	42	90	52	54	33
Use is Part of Planned Campaign[b]						
2,000 or less	27%	29%	17%	33%	50%	50%
2,001 – 5,000	45	43	6	50	31	78
5,001 – 15,000	50	35	16	42	52	71
15,001 – 30,000	50	40	23	58	33	53
30,001 or more	55	58	10	48	46	65

[a] Year covered is 1989.

[b] Base varies, but 142 companies responded.

Table 9: Communicating the Quality Message[a] (Grouped by Industry)

	Communication Vehicles Used					
	Articles in Company Periodicals Target:		*Letters/Memos From Top Management*	*Videos/ Slide Shows*	*Special Publications/ Brochures*	*Company-wide Conferences/ Rallies*
	All Employees	*Managers Only*				
Use is Occasional[b]						
Manufacturing	46%	61%	84%	55%	59%	37%
Durables	51	64	87	59	59	39
Nondurables	40	57	79	50	59	35
Service	63	54	89	51	55	35
Financial	80	50	94	61	58	10
Other	53	56	87	46	52	50
Total (all companies)	52	58	86	53	57	36
Use is Part of Planned Campaign[b]						
Manufacturing	54%	39%	16%	45%	41%	63%
Durables	49	36	12	41	41	61
Nondurables	60	43	21	50	41	65
Service	37	46	11	49	45	65
Financial	20	50	6	61	42	90
Other	47	44	13	46	48	50
Total (all companies)	47	42	14	46	43	64

[a] Year covered is 1989

[b] Base varies, but 142 companies responded

firms in the other industry groups. Campaign tactics involving quality rallies or articles geared to *managers* are most popular in financial service firms. Firms in all industries tend to use top management letters and memos on an as-needed basis, but nondurable companies have a slight edge in using these communiques as a campaign tactic.

Communication is only one factor in promoting employee involvement, but the data hint that planned campaigns may contribute to success. Those executives who profess a high level of satisfaction with their progress in involving employees in TQM are more likely to have planned communications campaigns than are executives who are disappointed with their progress (see "Summary" in Table 24). Moreover, those firms with a planned campaign using approaches such as rallies, articles targeted to managers, and videos, are less likely to report that negative attitudes toward quality are a major problem than are other respondents.

Sparking the Involvement Process

Respondents were asked about their use of management-review meetings, training, employee feedback devices and teams to trigger and sustain employee involvement. Top management support remains the *sine qua non*, in the words of one respondent, and several participants identified quality review meetings with top management as vital to success. "We have a weekly review of quality measures with senior management. People put their time where their priorities are, so this meeting really sends a loud and clear message about the importance of quality," says a banking executive. Next to review meetings, training and teams stand out as most crucial. However, many participants pointed out that all of the involvement techniques are interdependent, and each is necessary to accomplish specific objectives. The quotes heading the following sections reflect comments of respondents.

Training: "A Common Language and Understanding"

Quality awareness can be sparked by communications, but training helps to reinforce the quality message as well as to build the necessary skills. "Formal training must precede all else," a respondent from a durable goods producer proclaims. A recent Conference Board study of quality training in leading-edge firms suggests that such companies harness training as a change agent. Early in the TQM process, training focuses on quality awareness, attitudinal and behavioral change. As the process takes hold, the emphasis shifts to skill development. Team building, process management, customer awareness, the tools of quality measurement, and statistics are stressed[3] (see Exhibit 4 on page 24). Formal training "leveled the field and everyone spoke the same language and understood the same concepts," reports an executive in a consumer goods company.

Among respondents to this study, manufacturers outpace service firms in offering training—92 percent do so, compared to 75 percent of service companies. One reason for the difference is that TQM is a more recent development in service companies. Of those firms using TQM for one year or less, 70 percent offer quality training. At least 90 percent of those with a TQM process of two or more years duration, now train managers and/or nonmanagement employees (see Table 10). Firms with a TQM process of 8 years or more are somewhat less likely to offer formal training than are those with a process of 2 to 7 years. It is possible that quality has become institutionalized in the oldest processes, so that less training is needed—or that quality training is indistinguishable from ongoing training efforts.

The typical respondent reports that nearly all senior and middle managers are trained in quality; as are at least 80 percent of first-line supervisors and 50 percent of nonmanagement employees. The median number of hours of training annually is 16 for managers and 8 for nonmanagers. Manufacturers lead service firms in offering training to nonmanagers. Among manufacturers, 40 percent of nonmanagement employees clock 16 or more hours of training. This is true for less than 20 percent of

Table 10: TQM Involvement Techniques (Grouped by Age of TQM Process) (N=144)

	Number of Companies	*Periodic Quality Meetings*	*Training Programs*	*Short-Term Teams*	*Long-Term Teams*
Years TQM Process is in place					
8 years or more	24	71%	75%	79%	37%
5 – 7 years	39	85	95	90	49
2 – 4 years	52	83	90	96	36
1 year or less	31	58	71	89	19
Total (All Companies)	146	76	85	89	36

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[3] Kathryn Troy, *Quality Training: What Top Companies Have Learned*, The Conference Board, Report No. 959, 1991.

Exhibit 4: Quality Training Programs at Armco Inc.

Executive Action: 3-day event. Designed to enable a business unit leadership team to develop strategy and action plans necessary to guide the implementation of a Quality Strategy in their organization.

Quality Management: 2-day event. Attendees are Quality Improvement Team members and other key personnel. Designed to get the "buy-in" for why quality improvement is a necessity in today's world.

Management Action: 2-day event. Designed for middle managers in a business unit. Allows them to understand the organization's involvement in quality improvement and also explains the role of the Quality Improvement Team in their area and their role/responsibility in working with the Quality Improvement Team.

Quality Improvement Team: A 5-day event for a 10 to 12 person team composed of personnel representing a diagonal slice of the business unit organization. The objective is to develop and practice the skills of working together as a team to implement and manage a quality improvement system in their area of responsibility.

Corrective Action Team Leader: A 4-day event for prospective team leaders. Team leaders are from a cross-section of the organization and are given training in group dynamics and in teaching and using problem-solving skills in a group environment.

Work Group Leader: A 5-day event for first-line supervisors and/or group or section leaders. Participants are instructed in how to manage for quality improvement in a participative manner. Session covers interpersonal skills, group problem-solving skills, and group dynamics.

Supplier Quality Assurance: A 2-day event for teams of people who use/evaluate/purchase a given supply/commodity. Teams typically composed of representatives from purchasing, operations, maintenance, quality assurance and any required technical assistance. Teams are trained to establish functional requirements and performance standards to evaluate the given supply item or commodity.

Critical Process: A 3-day event for a cross-functional multiple disciplined team that is formed to address processes that cross departmental lines and have high impact on the products or services of the business unit (e.g., engineering change procedures, capital appropriations, introduction of new products, etc.). Training involves team building, action planning, and group problem-solving skills.

Statistical Process Control: As short as 4 hours to as long as 5 days tailored to the needs of the audience. The short version is a basic overview of SPC and its benefits to the organization. The longer versions cover X-BAR & R charts, P & NP charts, C & U charts, Central Limit Theorem, Capability, Rational Subgroups, Sample size, etc. Typically the technical people are given the 40 hour training and operators are given 16 hours of training.

Quality Engineering—Taguchi Methods (DOE): A 5-day event targeted to technical personnel. Participants are taught to design experiments using a creative problem-solving approach and statistical techniques which allow efficient determination of optimal operating conditions. Also covered are Taguchi's Loss Function and Analysis of Variance.

Quality Audits for Improved Performance: A 2-day event for personnel from all levels of the organization. Participants are taught the basics of Quality Auditing and how to use the audit function to improve a business unit.

General Facilitator: Specialized training designed for the audience and/or the facilitators being trained. Classroom time varies by subject and audience. Subjects include Root Cause Analysis, Systematic Problem Solving, Process Flow Analysis, Customer/Supplier Partnerships, etc.

Source: Armco Inc.

nonmanagement workers in service firms (see Table 11 and Chart 5).

As with communication campaigns, training appears to play a role in easing negative attitudes toward quality. Only a third of respondents offering 16 or more hours of training to managers consider negative attitudes among managers a major problem, compared with just over half of those clocking fewer hours. Among those firms which train nonmanagers for at least 6 hours, just 15 percent consider negative attitudes a major problem compared to 25 percent of those offering less time.

Table 11: Quality Training: Annual Average Number of Hours per Employee (Grouped by Industry)

	1 – 5	*6 – 15*	*16 or more*
Manufacturing (78)			
Managers	26%	19%	55%
Nonmanagers	19	41	40
Service (36)			
Managers	29%	21%	50%
Nonmanagers	43	40	17
(Base = 114 responses)			

Teams: "Involvement Where It Counts"

Teams often release the creative energies of those closest to work processes in a way that can help prevent or solve quality problems, cut across departmental and functional barriers, surface new ideas, and ultimately produce better products and services. Together with training, survey participants identify teams as heading the list of valuable involvement techniques. "Training is essential for culture change, teams for implementation," reports a diversified manufacturer.

Teams vary in purpose and duration. Short-term teams, such as a task force, may meet over a brief time span to investigate issues, solve specific problems or make recommendations on a discrete set of activities. Quality circles are groups which promote employee involvement and problem-solving relevant to immediate work-related needs. They are impermanent and may be disbanded or reconstituted as needs change. Virtually all manufacturing and 90 percent of service respondents have short-term teams. Typically, teams involve 50 percent of the firms' senior managers, 40 percent of middle managers and first-line supervisors, and 30 percent of nonmanagers.

Respondents laud short-term teams because they "involve people at all levels and give tangible results quickly." They are focused, task-oriented, meet regularly, are reinforcing and improve morale. Says one participant: "Task teams make bottom-line improvements which stimulate line management commitment."

Roughly 40 percent of respondents have long-term teams. This proportion rises to 60 percent among those firms rating themselves near the top in Baldrige award-readiness, and plunges to 20 percent among participants who say they are less than half way there. In general, the longer the TQM process has been in place, the greater the likelihood that such groups will exist. "Short-term teams were useful in the beginning to learn to solve easier problems, then we expanded into self-managed work groups for long-term benefits," says a manufacturer. Again, the firms with the oldest processes seem somewhat less likely to use long-term teams than those in the next age group (see Tables 7 and 10). In the oldest group, 4 of the 11 respondents who do not have long-term teams plan to start them within two years. Two firms are "very satisfied" with their progress toward involving employees, and the remainder are only "moderately" satisfied or dissatisfied with their progress.

The largest firms—those with more than 15,000 employees are also more likely to have long-term teams than are smaller firms, but half of the smaller group plan to implement such teams within three years (see Table 12). Typically, half of top management, about a quarter of middle managers and first-line supervisors, and a fifth of nonmanagers are involved in long-term teams. (These figures are medians.) Greater involvement at upper-management levels may be tied to the fact that long-term teams are started at the top of the organization and need time to work their way through management layers to workers. Since such teams tend to be the mark of a mature TQM process, there has not yet been sufficient time to complete the cascading process.

Members of long-term teams not only recommend action, but have the power to implement solutions. In some cases, team members are workers in the same department who meet periodically (e.g., weekly) to monitor quality, set schedules and control costs. Some teams are vertically structured, including representatives from many different levels of the company, who focus on changes in a particular product line or issue (such as new technology) over time. In a more evolved team model, workers may be cross-trained and enabled to take on a variety of responsibilities as needs shift. In addition to monitoring quality, scheduling and cost-control, team members take on some managerial tasks. They plan, hire and interact with customers and vendors. The managerial/supervisory role is transformed into that of leader. Team leaders become coaches, counselors—the pointmen for the group.

Table 12: Use of Long-Term Teams (Grouped by Size of Employee Population)

		Long-Term Teams	
	Number of Companies	*Have now (1990)*	*Plan (By 1993)*
Number of Employees			
2,000 or less	18	33%	50%
2,001 – 5,000	26	35	31
5,001 –15,000	48	25	40
15,001 – 30,000	30	47	27
30,001 or more	34	62	18
Total	156	40%	32%

Among the advantages to long-term teams, respondents note that autonomous teams show management's confidence in employees. "When you indicate confidence, employees take ownership and feel responsible." Moreover, teams focused on improvement commit their members to a joint effort rather than to a "program." In sum: "Teams (both autonomous and supervisory/participant) are very effective when supported with a consistent problem-solving methodology. They get people to concentrate on root causes in a continuous-improvement thought process," says a computer company executive.

Feedback Devices: "Direct Input From Each Employee"

Listening to customers is a key tenet of TQM, and respondents report extensive use of feedback devices with internal customers, managers and employees. Eight out of ten firms conduct attitude surveys and/or run focus groups to sense employee concerns and three quarters have an employee suggestion program. About half of the firms have done a communications audit—a formal attempt to understand how employees receive information, how they would *prefer* to receive it and how effective internal communications really are. Overall, service firms are more likely than are manufacturers to use these devices; it is possible that this use is linked to the initiation stage of the TQM process in later-starting service firms (see Chart 5).

Table 13: Use of Employee Feedback Devices (Grouped by Size of Employee Populations)

	Opinion/Attitude			*Focus Group*			*Communication Audit*		
	Number of Companies	*One Time*	*Periodic*	*Number of Companies*	*One Time*	*Periodic*	*Number of Companies*	*One Time*	*Periodic*
2,000 & less	13	23%	77%	11	0%	100%	7	14%	86%
2,001 – 5,000	18	28	72	11	18	82	10	30	70
5,001 – 15,000	39	21	80	23	13	87	15	40	60
15,001 – 30,000	23	9	91	20	20	80	13	23	77
30,000 +	27	4	96	23	9	91	14	14	86
Total	120	16%	84%	88	13%	87%	59	25%	75%

In the vast majority of firms, attitude or opinion surveys are customized, but about a quarter of the users report inclusion of some general material as well. Half of the respondents use outside consultants to conduct the surveys. Survey items are used to assess employee attitudes toward quality in 85 percent of the firms, and 75 percent include items which help to identify problems and obstacles to implementing TQM. About half of the firms also use the surveys to elicit suggestions from employees. "The surveys showed employees that we were serious about listening to their opinions, says a utility executive. "We demonstrated that employee feedback was received, listened to and acted upon," a banking executive reports.

In general, firms with a larger employee population are more likely than those of smaller size to conduct employee opinion or attitude surveys periodically, rather than relying on one-time use (see Table 13). Those firms reporting the highest levels of satisfaction with their progress in involving employees are also more likely to do periodic survey work than are those expressing dissatisfaction.

Surveys typically reach all or most managers and employees, but focus groups are by design more selective. Such groups might average 8 or 10 participants from either similar or differing management layers, job functions or company locations, varying with the objectives of the research. They may be targeted at ferreting out strengths and problems, generating concerns to be tested in broader survey work, or as an aid to understanding results of survey work. A service firm reports positive results through using focus groups to "get direct feedback regarding quality service barriers and ideas for improving service." Respondents indicate that about 10 percent of nonmanagement and first-line supervisors participate in focus groups, as do 20 percent of middle managers and a quarter of senior managers. (These numbers are medians.) Most firms report that focus groups are conducted periodically, rather than being a one-time event. Only 20 percent use outside consultants for this activity.

Those firms doing communications audits typically include all senior managers, six out of ten middle managers, half of their first-line supervisors and 4 out of 10 nonmanagers. The vast majority of firms doing audits repeat them periodically, and outside consultants conduct the audit in roughly a third of the companies.

Although three out of four respondents have employee suggestion programs, only half of this group was able to provide data on numbers of suggestions submitted in a recent year (1989) or the percent implemented. The median number of suggestions received was 700 (although one firm reported more than 260,000). About half were implemented. All senior managers and 75 percent of nonmanagerial employees are covered by the typical program, as are roughly 65 percent of middle managers and first-line supervisors. Several respondents identified suggestion systems as the most valuable of the involvement techniques they have tried. "We will reach 9,000 suggestions in 1990," a transportation service firms boasts. Over time, some firms replace the programs with the work of problem-solving or continuous improvement teams. "Suggestion programs have been dying out for several years. They are diffuse and opportunistic, compared with focused, team improvement efforts and a 'continuous improvement' imperative," a major manufacturer observes. (See box on page 27 for more on suggestion programs.)

Involvement Techniques Are Ongoing

Only about 20 firms report they have discontinued any of the involvement techniques they tried in the past few years. Most often mentioned were employee suggestion systems and training programs, which the firms felt needed to be overhauled or reformulated as part of a long-term strategy. A few discontinued opinion surveys or communication audits because positive results were negligible. One firm decentralized its management review meetings and another discontinued them, noting that they had been "sporadic at best."

Employee Suggestion Programs

One of the many methods firms use to involve employees in a TQM process is the Employee Suggestion Program. Three-quarters of the respondents in this study have suggestion programs in place, and they report receiving as few as 5 and as many as 262,000 suggestions in a recent year. Suggestion programs improve a company's business processes by encouraging employees to participate in their firm's drive for excellence. Employees' suggestions can result in tangible and intangible savings: Ideas may reduce waste; improve productivity, equipment and processes; heighten customer satisfaction; and upgrade services.

A review of employee suggestion programs submitted by members of the Conference Board's U.S. Quality Council reveals key areas of similarity as well as features which vary by company.

Standard Features:

Explanation of a Good Suggestion: To submit an application the employee must have a creative and original idea or approach; a clear and concise description; adequate details; and a well thought-out solution to accompany the idea. For example, a manufacturing company employee might suggest ideas for more efficient machine and equipment maintenance, with an explanation of how this would take place.

Eligibility Requirements: The company defines who would be eligible to participate in the program. Rules and regulations vary by company. For example, one company allows participation of regular and supplemental employees, as well as employees covered under their medical disability plan, employees on approved leaves of absences, and retirees under their retirement plan.

Submission of a Suggestion: In most cases, suggestions are submitted on a company suggestion form (see Exhibit 5 on page 28). Some companies allow submission by electronic mail, telephones and facsimiles. Extra sheets, drawings, charts and photos can also accompany the suggestion. Forms should be available in a designated area of every department. Individuals and teams can submit ideas. Most companies use one standard form for all types of submissions, and others develop a separate joint submission form for teams. Employees are encouraged to review their suggestions with their managers before submission.

Processing a Suggestion: After employees have filled out suggestion forms, they may drop them in an Employee Suggestion Box or send them to a central office. In some firms, suggestions may go directly to a chosen department such as Human Resources. Usually, each suggestion is stamped with the date upon receipt and assigned a reference number. In one company, an acknowledgment is sent to the employee within 10 working days. The suggestion is then forwarded for evaluation to the unit that would be responsible for implementation. If the unit accepts the idea, it is sent back to a suggestion team or committee where it is checked for award eligibility against other active suggestions. (A suggestion team or committee can be made up of the Human Resources executive vice presidents, supervisors, and representatives of management from areas such as engineering, production and quality control.)

Types of Awards: Suggestions may have tangible and intangible value. To earn a tangible savings award, a suggestion must prove to reduce costs or provide cash savings. If cost savings can be measured, one manufacturing company initiates a check for $100 and then issues 15 percent of the actual savings per quarter for one year on top of the employee's initial $100. A service company offers $1,000 in gift cheques if an idea is feasible and creative, can project a positive financial impact, and can compliment operational procedures.

Intangible savings awards are granted when a specific idea will result in savings or other benefits to the company that cannot be measured in dollars (e.g., improved service, product quality and reliability, and health or security).

Awards for tangible and intangible savings can range from $50.00 to $150,000. Some companies offer award winners free meals, trips or other nonmonetary rewards as an alternative.

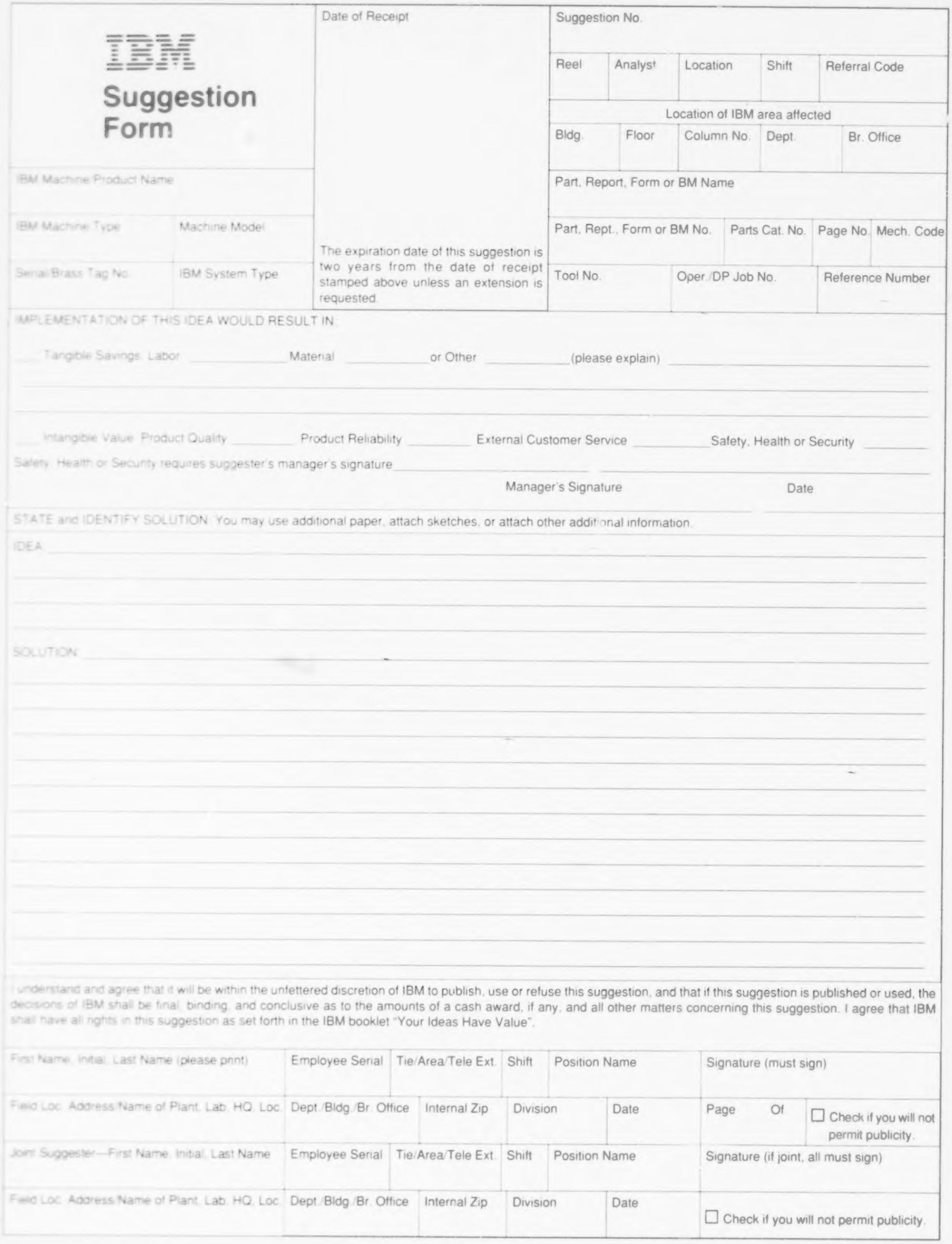
Variable Features:

Not all firms act on suggestions immediately. Some programs answer within 24 hours, while others need 30-60 working days, depending on their evaluation process. Most programs use a written form to respond to suggestions, assuming the employee gives a name. Some firms provide guidance on suggestions that should be avoided. For example, in evaluating suggestions for implementation, one company's policy disallows those suggestions that are part of an employees' assigned duties and job responsibilities. When this happens, the suggestion team may notify the employee in writing. Other subjects to avoid include new ideas for wages, work hours, employee benefits, recreation programs, business ventures and housekeeping, to name a few. In some programs declined suggestions may be reevaluated. In one company, a suggestion rejected for lack of merit is protected for 13 months, and may be resubmitted three times. If an employee disagrees with the decision, a further committee review can be requested. In another company, a suggestion that is not adopted can be resubmitted, as long as more information is added for reevaluation. This is considered a new request and should be submitted on a new suggestion form.

Those implementing Employee Suggestion Programs should include these key elements:

- A set of instructions and regulations
- Designated areas for suggestion forms
- Employee Suggestion Boxes at key company locations or other means of relay
- A suggestion team or committee for evaluation
- A process for implementing ideas
- A procedure for presenting awards

Exhibit 5: IBM Suggestion Form



IBM
Suggestion
Form

IBM Machine/Product Name

IBM Machine Type	Machine Model
Serial/Brass Tag No.	IBM System Type

Date of Receipt

The expiration date of this suggestion is two years from the date of receipt stamped above unless an extension is requested.

Suggestion No.

Reel	Analyst	Location	Shift	Referral Code

Location of IBM area affected

Bldg.	Floor	Column No.	Dept.	Br. Office

Part, Report, Form or BM Name

Part, Rept., Form or BM No.	Parts Cat. No.	Page No.	Mech. Code

Tool No.	Oper./DP Job No.	Reference Number

IMPLEMENTATION OF THIS IDEA WOULD RESULT IN:

___ Tangible Savings: Labor ________ Material ________ or Other ________ (please explain) ________

___ Intangible Value: Product Quality ________ Product Reliability ________ External Customer Service ________ Safety, Health or Security ________

Safety, Health or Security requires suggester's manager's signature ________

Manager's Signature Date

STATE and IDENTIFY SOLUTION. You may use additional paper, attach sketches, or attach other additional information.

IDEA

SOLUTION

I understand and agree that it will be within the unfettered discretion of IBM to publish, use or refuse this suggestion, and that if this suggestion is published or used, the decisions of IBM shall be final, binding, and conclusive as to the amounts of a cash award, if any, and all other matters concerning this suggestion. I agree that IBM shall have all rights in this suggestion as set forth in the IBM booklet "Your Ideas Have Value".

First Name, Initial, Last Name (please print)	Employee Serial	Tie/Area/Tele Ext.	Shift	Position Name	Signature (must sign)
Field Loc. Address/Name of Plant, Lab, HQ, Loc.	Dept./Bldg./Br. Office	Internal Zip	Division	Date	Page Of ☐ Check if you will not permit publicity.
Joint Suggester—First Name, Initial, Last Name	Employee Serial	Tie/Area/Tele Ext.	Shift	Position Name	Signature (if joint, all must sign)
Field Loc. Address/Name of Plant, Lab, HQ, Loc.	Dept./Bldg./Br. Office	Internal Zip	Division	Date	☐ Check if you will not permit publicity.

Sustaining Involvement

Responses to this study suggest that the crucial test for those who implement TQM lies in sustaining the process over time. Skeptical workers and managers continue to scrutinize their leaders' actions to ascertain whether they are "walking the talk." While continuing to provide role models, to train, and to communicate TQM success stories widely, survey participants also use employee recognition and performance measurement to demonstrate a commitment to TQM. For example, IBM Corporation's Rochester facility, a 1990 Baldrige award winner, has a wide variety of recognition and compensation programs (see Exhibit 6 on page 30).

Awards Programs

Firms recognize achievement in order to build esteem and foster creativity among individuals, teams, business units or plants. Seeing such an atmosphere as crucial to the success of a continuous improvement process, Xerox Corporation offers a special workshop, "The Power of Recognition," to help sensitize managers to its importance.[4] The most effective form of recognition might well be a pat on the back by a supervisor at the instant the achievement takes place. However, about 85 percent of firms give formal awards to individuals and teams in recognition of quality achievement. Three quarters offer unit or plantwide awards. As Table 14 indicates, the number of employees recognized increases with the size of the work force. Respondents employing 2,000 or less recognized 49 employees (the median), while the largest firms recognized more than 1,300.

Table 14: Employees Receiving Quality Awards (Grouped by Size of Employee Population)

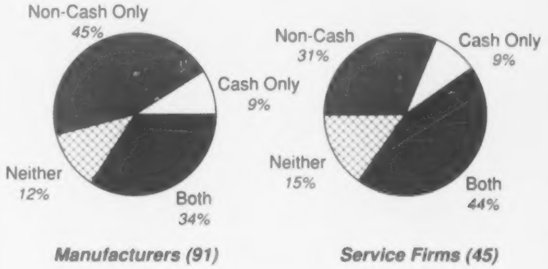
	Number of Companies	*Median Number of Employees Receiving Awards*
Number of Employees		
2,000 or less	12	49
2,001 – 5,000	13	150
5,001 – 15,000	32	200
15,001 – 30,000	21	450
30,001 or more	18	1,332
Total	96	200

In some firms, awards to individuals may be an extension of a practice that predated the adoption of TQM, but in many firms it coincides with institution of the process. More than a quarter of the firms with TQM in place for a year or less do not give awards to individuals, while this is true of less than 10 percent of the firms that initiated a TQM process two to four years ago (see Table 15, page 30). Noncash awards prevail in almost half of manufacturing firms; about the same proportion of service firms offer a combination of cash and noncash recognition. Many quality professionals hold that cash alone is not an effective motivator for quality achievement, and less than 10 percent of firms in either sector offer only cash awards (see Chart 6).

Chart 6

Awards to Individuals

(Base = 136 Firms)



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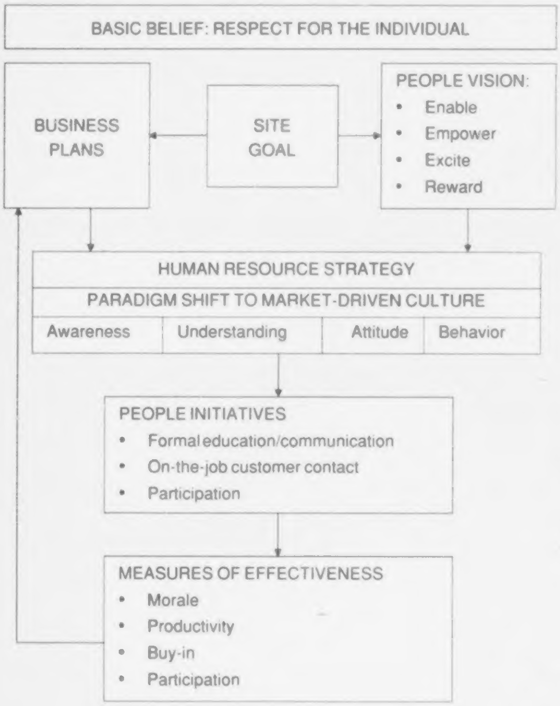
[4] Dr. Harold J. Tragash, "Building Momentum Through Reward and Recognition," *Total Quality Management*, The Conference Board, Report No. 963, 1991.

Exhibit 6: Recognition and Reward Programs at IBM Rochester

Integrating People Into Quality and Business Plans

Achieving Market-Driven Quality goals depends on enabled, empowered, excited, and rewarded employees. IBM Rochester's human resources strategy strives to bring about a cultural shift from a product-driven quality focus and consists of three initiatives: formal education, on-the-job customer contact, and participation. Morale, buy-in, participation, and productivity are measured to ensure these human resource initiatives are continuously improved.


BASIC BELIEF: RESPECT FOR THE INDIVIDUAL
BUSINESS PLANS
SITE GOAL
PEOPLE VISION:
• Enable
• Empower
• Excite
• Reward
HUMAN RESOURCE STRATEGY
PARADIGM SHIFT TO MARKET-DRIVEN CULTURE
Awareness
Understanding
Attitude
Behavior
PEOPLE INITIATIVES
• Formal education/communication
• On-the-job customer contact
• Participation
MEASURES OF EFFECTIVENESS
• Morale
• Productivity
• Buy-in
• Participation

Source: *The Quality Journey Continues*, IBM, December 1990.

Participation Initiatives

The environment at IBM Rochester fosters participation and empowerment through many programs. Compensation and recognition programs ensure that people are rewarded for quality improvement and innovation.

EMPOWERMENT DECISION-MAKING

- Opinion survey
- Speak Up process
- Open Door
- Suggestion Plan
- Roundtables
- Skip-level interviews
- Development plans
- Performance plans
- Manufacturing Skills Integration

JOB FLEXIBILITY

- Full employment
- Volunteer temporary assignment
- Flextime schedules
- Internal transfer opportunities
- Retraining

RECOGNITION

- Performance evaluation
- Verbal thanks
- Promotion
- ABS Quality Awards
- Team awards
- Management Appreciation Awards
- ABS Excellence Awards
- Management Excellence Awards
- Author recognition
- Inventor recognition
- Sitewide publicity

COMPENSATION

- Merit pay
- IBM benefits plans
- Voluntary tax-deferred savings plan
- Voluntary stock purchase plan
- Employee Assistance Program
- A Plan for Life
- Elder Care Referral
- Child Care Referral
- IBM Club
- Watson Scholarship

Table 15: Quality Awards for Individuals and Groups (Grouped by Age of TQM Process) (N=146)

	Give Awards To:											
	Individuals				*Teams*				*Units/Plans*			
	None	*Cash*	*Noncash*	*Both*	*None*	*Cash*	*Noncash*	*Both*	*None*	*Cash*	*Noncash*	*Both*
Years TQM Process in Place												
8 years or more	0%	10%	58%	31%	5%	10%	53%	32%	21%	10%	53%	16%
5 – 7 years	11	6	43	40	9	8	49	34	20	–	63	17
2 – 4 years	8	6	49	37	16	6	49	29	37	10	35	10
1 year or less	27	15	23	35	38	8	31	23	73	4	11	11

Exhibit 7: Xerox Corporation Quality Teams

TEAM INVENTORY: Is your team an Excellent Team?

Whether you would like to enter the Xerox Team Excellence Award challenge, or whether you are simply interested in becoming a better team, it's a good idea to review your team performance periodically. And one way to get your evaluation started is to rate yourself on the following questions. (You can utilize the same scale used in the Excellent Team certification process, shown on this page for easy reference.)

TEAM INTEGRITY	***Rating***
• Are the team goals well understood and actively supported by team members, colleagues and management?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
• Do these goals clearly contribute to Xerox efforts to increase market share, improve return on assets, and promote customer satisfaction?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
• Is there at least 75% attendance at all team meetings?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
• Do members understand and follow through on their responsibilities?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
• Are meetings orderly and productive?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
AVERAGE "SCORE" FOR TEAM INTEGRITY	________

PROCESS DISCIPLINE	
• Does the team use analytical tools effectively?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
• Does the team stick to the problem-solving process?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
• Has the team fully implemented the solution?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
• Was the solution evaluated after implementation?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
AVERAGE "SCORE" FOR PROCESS DISCIPLINE:	________

Achievement Level

5 -- Very large extent	2 -- Small extent
4 -- Large extent	1 -- Very small extent
3 -- Moderate extent	0 -- Not at all

RESULTS	***Rating***
• Have the results been documented and verified properly?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
• Were these results presented clearly and effectively to the team's colleagues and management?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
• Is there evidence of a savings in cost or time, an improvement in quality, an increase in customer satisfaction, or a rise in profits that can be directly attributed to the solution?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
• Did the team obtain their objective?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
AVERAGE "SCORE" FOR RESULTS:	________

INNOVATION	
• Did the team incorporate at least one element of creativity in solving the problem?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
• Did the team show innovation in its search for the best solution?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
AVERAGE "SCORE" FOR INNOVATION:	________

TEAM DEVELOPMENT	
• Was a supportive group climate developed and sustained during the problem-solving process?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
• Is there an attitude of mutual trust and respect prevalent among group members?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
• Is there evidence that the analytical and interpersonal skills learned within the team setting have influenced the actions of each individual in a personal way?	☐ ☐ ☐ ☐ ☐ ☐ 0 1 2 3 4 5
AVERAGE "SCORE" FOR TEAM DEVELOPMENT:	________

Source: *Team Excellence*, Xerox Corporation.

Since teamwork is key to successful TQM, quality experts counsel firms not to overemphasize individual achievement. Thus, team awards are almost as common as individual awards. At Control Data Corporation, leadership awards are available to teams or individuals "who have exhibited exceptional personal or organizational commitment to continuous quality improvement." Xerox encourages its teams to track themselves against five criteria (see Exhibit 7). To qualify for an award at an annual ceremony held at five geographically dispersed company locations, teams must score at least "4" on a five-point scale for each criterion.

Fewer than 10 percent of those firms with a TQM process of 5 years or more are without team awards, but close to 40 percent of the recent startups have not yet instituted them. Noncash awards predominate in both service and manufacturing firms, but service firms lag behind manufacturers in creating a team award program (see Chart 7). Team awards are offered by nearly 90

Chart 7

Awards to Teams

(Base = 137 Firms)

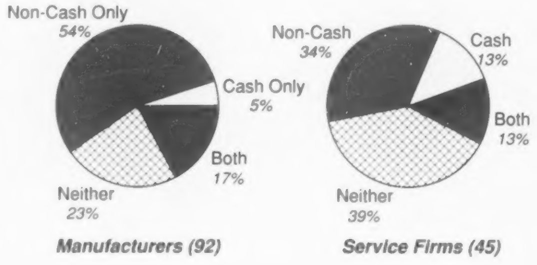
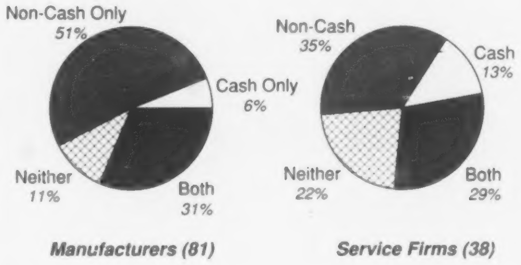


Chart 8

Awards to Units & Plants

(Base = 119 Firms)



percent of manufacturing respondents, versus 60 percent of service firms. Illinois Power Company is one of the service firms that does make team awards. The Team Achievement Award goes to groups who meet three criteria. They must follow the firm's quality process; meet their team's mission; and achieve results in customer service or other specified areas. This is a non-cash award, where team members receive a certificate, a gift item, and the chance to win a weekend trip. The firm's Goal Achievement Award is cash-based, and recognizes work teams for achieving annual performance goals set by local management.

Unit and plantwide award programs are still evolving. Seventy-five percent of the firms with the most recent TQM start-up lack them as do nearly 40 percent of firms with TQM of a 1986-88 vintage. Awards are primarily noncash, especially among manufacturers, but almost a quarter of service firms do not yet have awards of unit or plantwide scope (see Chart 8).

Westinghouse Electric Corporation and Control Data Corporation are among the firms that make unit or plant-wide awards. In 1988, Westinghouse announced the annual George Westinghouse Total Quality Awards, which are intended for Westinghouse organizations "no smaller than a division or equivalent unit." Each year a panel of judges makes two awards, one for Best Total Quality Performance and one for Most Improved Total Quality Performance. The winning organization receives an award plaque and a cash award of $200,000. In addition to its award for Leadership, Control Data also makes awards for Innovation, Service and Product. Individuals, business units, teams, divisions and organizations are eligible. Vendors and suppliers may also be nominated for the product and service awards (see Appendix). Illinois Power's Goal Achievement Award is a cash award which may go to a power plant or service area as well as to a smaller team unit. This award is based on the work unit's achievement of annual goals. Some firms offer additional incentives to all employees. For example, Illinois Power has an incentive compensation program in which its employees can receive cash and stock if annual goals are achieved.

Awards programs for individuals, teams, units or plants are in place in more than 90 percent of the firms that give themselves a high score on Baldrige award-readiness. In contrast, 20 percent of those firms which say they are less than half way to meeting Baldrige criteria do not have award programs for individuals; 30 percent lack such programs for teams, and 50 percent have no award for units or plants (see Table 16). The firms at the low end of the Baldrige scale report issuing 175 awards annually (the median), while those at the high end register 450.

Performance Appraisal, Compensation, Promotion

Perhaps the most direct evidence that shows top management is serious about TQM is to link quality achievement to performance review, compensation and promotion (see Exhibit 8). Not all respondents were able to supply data on this topic, but among the 127 who did, three-quarters link quality achievement to performance appraisal. Although 4 out of 10 firms say this practice applies to all employees, it is more common to target specific groups, starting at the top.

Table 16: Quality Awards for Individuals and Groups (Grouped by Baldrige Award Readiness Self-Rating) (N=129)

	Give Awards To:											
	Individuals				*Teams*				*Units/Plans*			
	None	*Cash*	*Noncash*	*Both*	*None*	*Cash*	*Noncash*	*Both*	*None*	*Cash*	*Noncash*	*Both*
Baldrige Award Readiness Self-Rating												
Less than half way	21%	12%	41%	26%	29%	12%	40%	19%	50%	5%	39%	5%
Half to 75% of way	11	6	41	41	11	9	43	37	24	7	40	29
75 to 100% of way	7	7	42	43	5	7	47	40	6	9	73	12
Total	13	8	42	36	15	9	44	32	27	7	50	16

Exhibit 8: Performance Rating Guidelines: Ore-Ida, a Division of H.J. Heinz

Rating TQM Performance

Exempt Salaried Employees

No Exempt employee will be eligible for an "Exceeds" or "Far Exceeds" rating without *at least* an "Exceeds" rating for TQM performance.

Non-Exempt Salaried Employees

No Non-Exempt employee will be eligible for a "Superior" rating without at least an "Above Average" rating for TQM performance.

Listed below are some examples of how an individual might demonstrate commitment to and participation in TQM. This is not a list of requirements for a particular performance level. Management discretion will be required, and this list will provide ideas on things to consider when rating TQM performance.

- Charting of own errors (shows evidence of accepting 50 percent of responsibility for problems—an aspect that is critical to the success of TQM)
- Quality (first) and quantity (second) of QRs [Quality Recommendations] submitted—consider magnitude of hassle elimination and also dollar impact if applicable
- Responsiveness in answering QRs
- Application of TQM concepts in resolving problems
- Active participation on a CAT [Corrective Action Team]—consider level of participation
- Act as TQM trainer/orienter in addition to normal job—consider level of training/hours of commitment
- Take TQM-related training over and above core training requirements; e.g., evening course on statistical process control
- Number of formal and informal recognition awards received
- Leadership (for supervisory personnel). Walk like you talk; evidence of subordinates' acceptance of and participation in the process; coaching of subordinates; recognition given to subordinates
- Active participation on Steering Committee, Council, TQM Team, Ad Hoc Committee (groups one is required to serve on)
- Other non-normal activities which enhance the company's TQM efforts and performance

Source: Ore-Ida

Performance

Quality is a factor in performance appraisal for managers in at least 70 percent of the Baldrige award-ready firms, and for nonmanagers in over 50 percent. Of those rating themselves under half way to Baldrige status, about 45 percent link quality to performance appraisal for managers, and just under 30 percent apply it to nonmanagers (see Table 17). Baldrige award winner, Federal Express Corporation, uses a bottom-up as well as top-down performance appraisal to assess leadership skills in its managers. An employee survey form helps the firm pinpoint its leadership strengths and weaknesses. Managers must meet with their staff to discuss

Table 17: Linking Quality Achievement to Performance Measurement/Reward
(Grouped by Baldrige Award-Readiness Self-Rating) (N=118)

	Quality Achievement Linked to:											
	Performance Appraisal for:				*Compensation for:*				*Promotion for:*			
	Senior Mgrs.	*Middle Mgrs.*	*1st-line Supv.*	*Non-Mgrs.*	*Senior Mgrs.*	*Middle Mgrs.*	*1st-line Supv.*	*Non-Mgrs.*	*Senior Mgrs.*	*Middle Mgrs.*	*1st-line Supv.*	*Non-Mgrs.*
Baldrige Award-Readiness Self-Rating												
Less than half way	44%	54%	41%	28%	31%	33%	13%	10%	15%	15%	15%	5%
Half to 75% of way	67	72	65	55	52	60	49	35	27	35	30	22
75 to 100% of way	79	79	72	54	64	56	54	33	54	61	54	28
Total	63	69	59	46	49	50	38	11	32	37	33	19

Table 18: Linking Quality Achievement to Performance Measurement/Reward (Grouped by Age of TQM Process) (N=118)

	Quality Achievement Linked to:								
	Performance Appraisal for:			*Compensation for:*			*Promotion for:*		
	Middle Mgrs.	*1st-line Supv.*	*Non-Mgrs.*	*Middle Mgrs.*	*1st-line Supv.*	*Non-Mgrs.*	*Middle Mgrs.*	*1st-line Supv.*	*Non-Mgrs.*
Years TQM Process Is In Place									
8 years or more	68%	74%	63%	63%	58%	37%	53%	53%	31%
5 – 7 years	72	58	47	53	44	28	50	36	22
2 – 4 years	67	55	45	45	28	26	24	26	17
1 year or less	57	48	28	48	28	24	28	29	14
Total	67	58	46	51	38	28	37	34	20

problem areas and create action plans to make improvements (see Exhibit 9).

The longer TQM is in place, the greater the proportion of firms that link appraisal of first-line supervisors and nonmanagers to quality (see Table 18). Overall, more than 65 percent of the companies make it part of the review for senior and middle managers; about 60 percent appraise first-line supervisors for achievement in quality, and 46 percent include it in reviews of nonmanagers. Service firms are somewhat more likely to include nonmanagers as well as managers (see Table 19).

Compensation

Compensation is tied to quality in 60 percent of responding firms, but less than 50 percent cover all employees. Again service firms lag behind manufacturers in making the tie to compensation. However, a third of service firms include both managers and nonmanagers, compared to a quarter of manufacturers. Overall, 50 percent of the companies factor quality into compensation for senior and middle managers and about 40 percent include first-line supervisors. Nonmanagers are tied in by almost 30 percent of firms, and those with a TQM process of 8 years or longer are more likely to have done so.

Table 19: Linking Quality Achievement to Performance Measurement (Grouped by Industry Sector)

	All Companies (127)	*Manufacturing (85)*	*Service (42)*
Linked to:			
Performance Appraisal	**74%**	**75%**	**86%**
Managers & Nonmanagers	46	43	64
Managers Only	27	32	21
None	26	25	14
Compensation	**59**	**62**	**50**
Managers & Nonmanagers	27	25	31
Managers Only	31	38	19
None	41	38	50
Promotion	**45**	**46**	**41**
Managers & Nonmanagers	20	18	17
Managers Only	24	28	24
None	55	54	59

Among firms placing themselves near the top of the Baldrige ranking, more than half tie quality to compensation for managers and supervisors and a third include nonmanagers. Those in the bottom half of the award-ready ranking have made only small strides in linking compensation to quality for supervisor and nonmanagers; but a third make that tie for managers.

Promotion

Companies with a TQM track record are also moving down the organization chart in tying promotion to quality achievement. Well over 50 percent of the firms with the oldest TQM processes use this criterion with middle managers and first-line supervisors and 30 percent extend it to promotion of nonmanagers (see Table 18). However, nearly 60 percent of service firms and 55 percent of manufacturers do not yet link quality to promotion. Overall, in firms making the link, about 35 percent include managers and 20 percent include nonmanagers.

Promotion of managers and first-line supervisors is connected to quality in at least half of the firms in the top Baldrige group. Over a quarter also link quality to promotion of nonmanagers. Only a handful of those firms in the bottom half of Baldrige ranking link quality achievement to promotion for managers or nonmanagers.

As part of Xerox Corporation's management resources evaluation process, individuals are rated as "role model," "competent" or "needs work" on five mandatory requirements for management positions. These are: business results; leadership through quality; human resources management; teamwork; and corporate values. In assessing managers' readiness for promotion, executives to whom they report use personal

Exhibit 9: Measuring Leadership at Federal Express

From the beginning Federal Express has lived by a corporate philosophy PEOPLE-SERVICE-PROFIT. We measure continuous leadership improvement with one of our most effective quality program tools which is the SFA or **SURVEY-FEEDBACK-ACTION** program. The SFA program comprises the following:

1. **Survey:** An anonymous survey completed by all employees.
2. **Feedback:** A feedback session in which the employees in each workgroup use Quality improvement techniques to identify solutions to problems identified in the survey.
3. **Action:** An action plan which may serve as an ongoing Quality improvement plan for the People issues identified by the workgroup during the feedback session.

The survey instrument consists of a set of carefully developed questions about leadership (both Corporate and local management), about the employee's identification with Federal Express, about reward systems, about workgroup cooperation, and about job conditions. Survey results are provided as part of the continuous improvement process within Federal Express. Employees completing the survey are ensured individual anonymity. A representative of the Personnel Division administers the survey and forwards the completed surveys to the Human Resource Analysis (HRA) Department. Surveys are analyzed electronically and workgroup or composite results are provided to the manager. This report provides the basis for discussion for the workgroup during the feedback session. For workgroups with fewer than three members, workgroup results are not provided.

After each survey, managers must meet with their staff, as a group, within six weeks after survey results are distributed to discuss any problems identified, and are required to come up with a plan of action to resolve them. Survey results tell us where our leadership's strengths and weaknesses lie. Every year, SFA is used to diagnose corporate-wide leadership improvements needed.

The "action" phase of our annual employee attitude survey is a vital tool for helping managers surface potential workgroup problems. Some of these action plans have resulted in programs that have been implemented company-wide. For example, we added a Professional Incentive Compensation to our established Management Incentive program and a Performance Improvement program was initiated.

HOW TO ANSWER: Read each statement carefully. Then to the right of each statement mark the bubble which best expresses your agreement or disagreement with the item. Mark only one answer for each item, and remember to respond to all items. Remember that "workgroup" means all persons who report to the same manager as you do regardless of job title.

		Strongly Agree	Agree	Sometimes Agree/Disagree	Disagree	Strongly Disagree	Undecided/Don't Know
1. I feel free to tell my manager what I think.	1.	SA	A	AD	D	SD	U
2. My manager lets me know what's expected of me.	2.	SA	A	AD	D	SD	U
3. Favoritism is not a problem in my workgroup.	3.	SA	A	AD	D	SD	U
4. My manager helps us find ways to do our jobs better.	4.	SA	A	AD	D	SD	U
5. My manager is willing to listen to my concerns.	5.	SA	A	AD	D	SD	U
6. My manager asks for my ideas about things affecting our work.	6.	SA	A	AD	D	SD	U
7. My manager lets me know when I've done a good job.	7.	SA	A	AD	D	SD	U
8. My manager treats me with respect and dignity.	8.	SA	A	AD	D	SD	U
9. My manager keeps me informed about things I need to know.	9.	SA	A	AD	D	SD	U
10. My manager lets me do my job without interfering.	10.	SA	A	AD	D	SD	U
11. My manager's boss gives us the support we need.	11.	SA	A	AD	D	SD	U
12. Upper management (directors & above) lets us know what the company is trying to accomplish.	12.	SA	A	AD	D	SD	U
13. Upper management pays attention to ideas and suggestions from people at my level.	13.	SA	A	AD	D	SD	U
14. I have confidence in the fairness of management.	14.	SA	A	AD	D	SD	U
15. I can be sure of a job as long as I do good work.	15.	SA	A	AD	D	SD	U
16. I am proud to work for Federal Express.	16.	SA	A	AD	D	SD	U
17. Working for Federal Express will probably lead to the kind of future I want.	17.	SA	A	AD	D	SD	U
18. I think Federal Express does a good job for our customers.	18.	SA	A	AD	D	SD	U
19. All things considered, working for Federal Express is a good deal for me.	19.	SA	A	AD	D	SD	U
20. I am paid fairly for the kind of work I do.	20.	SA	A	AD	D	SD	U
21. Our benefit programs seem to meet most of my needs	21.	SA	A	AD	D	SD	U
22. Most people in my workgroup cooperate with each other to get the job done.	22.	SA	A	AD	D	SD	U
23. There is cooperation between my workgroup and other groups in Federal Express.	23.	SA	A	AD	D	SD	U
24. In my work environment we generally use safe work practices.	24.	SA	A	AD	D	SD	U
25. Rules and procedures do not interfere with how well I am able to do my job.	25.	SA	A	AD	D	SD	U
26. I am able to get the supplies or other resources I need to do my job.	26.	SA	A	AD	D	SD	U
27. I have enough freedom to do my job well.	27.	SA	A	AD	D	SD	U
28. My workgroup is involved in activities to improve service to our group's customers.	28.	SA	A	AD	D	SD	U
29. The concerns identified by my workgroup during last year's SFA feedback session have been satisfactorily addressed.	29.	SA	A	AD	D	SD	U

Source: Federal Express

Table 20: Baldrige Award Self-Rating and Satisfaction With Progress Toward Employee Involvement in TQM (Grouped by Industry)

Level of satisfaction in:	Baldrige Award Self-Rating Almost there (75% or more)	 Half to 75% of way	 Less than half way
Manufacturing (N=84)			
Very/extremely	50%	24%	50
Moderately	46	59	46
Somewhat/not at all	4	17	4
Service (N=48)			
Very/extremely	67	27	11
Moderately	25	56	44
Somewhat/not at all	8	17	44

observations, consultations with others, and results from independent employee attitude surveys. To be eligible for promotion to the executive ranks, a manager must achieve "role model" status in quality. For all other managerial positions, an individual must be at least "competent" in quality.

Firms that tie achievement in quality to performance review and reward appear to have a somewhat less severe problem with negative attitudes towards quality among their managers than do those making no such link. Such ties seem to have little impact on the prevalence of negative attitudes among nonmanagers, perhaps because firms report less initial resistance to TQM among this group.

Gauging Progress

Participants were asked whether they had made a formal effort to evaluate their firms' progress toward successful employee involvement and what they considered their major successes to be. A third of the participants have conducted a formal evaluation. These firms employ many of the same devices used to gather employee feedback. They also study team participation rates, employee suggestion levels, and percent of employees involved in training efforts. Some firms use formal ratings systems, self-appraisal matrices, quality systems reviews and self-examinations using guidelines from awards programs such as Baldrige.

Among those making a formal evaluation, nearly 40 percent are "very" or "extremely" satisfied and 20 percent are only "somewhat" or "not at all" satisfied with their progress toward employee involvement. Of the group who have not made a formal assessment, only 20 percent are "well" satisfied.

Baldrige Criteria: How Much Progress?

Just as half the companies surveyed reported "moderate" levels of satisfaction with progress toward involving employees in TQM, the typical respondent reports being about half way toward achieving Baldrige award status. In fact, there appears to be a correlation between respondents' satisfaction with employee involvement and their Baldrige self-rating, especially among manufacturing firms. For example, among manufacturers rating themselves less than half way to award-readiness, only 4 percent report being highly satisfied with their progress toward involving employees in TQM (see Table 20).

Again, support from the top provides a critical edge. Both those respondents who estimate that their firms are approaching "world class" status and those scoring themselves in the lower half of the award ranking can count on a healthy level of support from nonmanagement employees. But leadership is a key Baldrige category and those firms giving themselves a high Baldrige rank report that they can rely on strong backing from the top of the organization. More than 80 percent report that top management actively endorses TQM, and 70 percent can count on strong support from senior managers. In contrast, only about 25 percent of the group at the bottom half of the ranking have won major support from top or senior managers, and few (15 percent or less) have enthusiastic backing at intermediate management levels (Table 21).

Table 21: Level of Support for TQM (Grouped by Baldrige Award-Readiness Self-Rating *) (N=135)

	Support by: Top Mgmt.		Senior Mgmt.		Middle Mgmt.		1st-Line Supervisor		Non-Mgmt.	
	High	Low	High	Low	High	Low	High	Low	High	Low
Baldrige Award-Readiness Self-Rating										
Less than half way	26%	26%	23%	25%	11%	36%	15%	33%	44%	7%
Half to 75% of way	53	18	48	10	31	22	24	12	41	6
75 to 100% of way	82	0	68	0	28	10	31	15	56	8
Total	52	13	45	13	23	24	23	20	47	7

* Firms responding "moderate" were eliminated.

Table 22: Impact of Negative Attitudes on TQM Implementation (Grouped by Baldrige Award-Readiness Self-Rating) (N=136)

	Managers: Impact is			*Nonmanagers: Impact is*		
	Great/ Very Great	*Moderate*	*Minor/ Negligible*	*Great/ Very Great*	*Moderate*	*Minor/ Negligible*
Baldrige Award-Readiness Self-Rating						
Less than half way	47%	42%	11%	21%	38%	40%
Half to 75% of way	37	40	23	13	49	38
75 to 100% of way	32	32	36	14	33	52
Total	39	38	23	16	40	43

Thus, the the top-down process has yet to work for those firms in the lower half of the Baldrige ranking. Almost half say that negative attitudes among managers cause difficulty (Table 22). This is true for only a third of those near the top of the ranking. "The principal difficulty is the degree to which management at all levels recognize the need for a fundamental change in their own behavior from the way they were trained, rewarded and promoted," says an executive from an electronics firm.

Even 10 to 15 percent of the "world class" aspirants have low levels of buy-in from middle managers and first-line supervisors. And middle managers are holdouts in 20 percent of firms that rate themselves between half and 75 percent of the way to award status. During the transition to TQM, these intermediate management layers are at the pressure points. They are encouraged to empower those they supervise, to share some of their responsibilities with workers, to improve quality, but "reward and promotion is still tied to the bottom line, not to quality," notes an executive who rates his firm 65 percent of the way to award status. "At first it is more on top of an already full plate. Then 10 percent say it doesn't apply to them. Another 10 percent say they already do quality work," says a manufacturing executive whose company plans to apply for the Baldrige Award soon.

Table 23 on page 38 summarizes how prevalent quality-related communications, training, team involvement, recognition and rewards are in firms at differing stages of Baldrige award-readiness. Those close to "world class" status are ahead of the low-ranking firms on all measures and outstrip the next group on most measures. However, the top group stands out for its use of management review meetings, long-term teams, focus groups, and links between quality achievement and compensation and promotion.

Testimony to Success

In open-ended comments, survey respondents listed a wide range of accomplishments. As might be expected, these vary with the maturity of the TQM process (see box). Since measurement is a key element of a credible TQM process, several firms itemized measurable results:

Achievements Grow as TQM Process Matures

Time Process In Place	*Major Successes Since Process Began*
Under 1 year	"Creating a Corporate Quality Director position and committing to begin a formal process."
	"Motivation of lower-ranking employees; they tend to be more sincere."
1 year	"Initiation of a strategic planning process focused on Quality program implementation."
	"Buy-in from upper management; enthusiasm from middle managers; successful combination of training management and contractuals; general improvement in attitudes where training and quality circles have been implemented."
2-3 years	"Starting company-wide team training project after institutionalizing participative management."
	"Over 50 percent of the company has been through a quality training program. The number of teams, approved team recommendations and cost savings continue to increase."
5 years	"Team involvement at lower levels and a good start in white collar areas."
	"Tapping into the talents of front-line associates; Involving the mass of the work force on a common focus; reeducating our management to support the needs of line associates; control charts to map and control process variability." This last technique "will eventually separate the long-term quality processes from the 'flash in the pan' ones."
8 years	"Major increase in market share, directly tied to quality improvement."
9-11 years	"Significant improvement in customer satisfaction and corporate performance."
	"Proceeding according to plan: High level of employee commitment, high level of management participation."

Table 23: Summary of Baldrige Award-Readiness Self-Rating Estimates (Grouped by Communication, Involvement, Recognition and Performance Measurement Practices)

	Baldrige Self-Rating*		
	Almost there (75% or more)	*Half to 75% of way*	*Less than half way*
TQM Practice:			
Planned Communication Campaign			
Articles in employee publications targeting:			
All employees	55%	47%	39%
Managers only	29	24	12
Top management letters/memos	17	7	9
Special brochures	36	35	19
Videos	33	40	26
Conferences/Rallies	45	44	19
Involvement			
Periodic meetings with top management	93	79	52
Formal training	93	83	78
Short-term teams	93	88	86
Long-term teams	60	42	20
Opinion/attitude surveys	77	65	65
Communication audit	33	21	22
Focus groups	65	54	37
Employee suggestion program	65	65	45
Awards to:			
Individuals	92	89	79
Teams	95	89	71
Units/Plants	94	76	49
Tie quality achievement in middle managers to:**			
Performance appraisal	79	72	54
Compensation	56	60	33
Promotion	61	35	15

* Table base varies.

** See Table 17 for information on other layers of management.

- "97 percent natural teams meeting; 90 percent of natural teams measuring results; 100 percent of employees trained in statistical process control and 75 percent trained in team management; multiple efforts yielding dollars and improved customer satisfaction"

  — *a chemical company*
- "reduced cost of poor quality by over $50 million; 99 percent customer satisfaction with products and services; ability to make change more readily"

  — *a computer company*

A respondent from a computer firm emphasized the importance of concrete outcomes, noting that the firm "integrated quality with the other standards by which the business is conducted (e.g., financial, strategic planning). The focus is on results, not 'rah-rah' activity. There is a direct impact on improving the business processes."

Firms also report a mix of quantitative and qualitative gains, with a consumer goods company citing "Improved communication (internally and externally), reduced rework, lower absenteeism, productivity gains, better supplier relations and labor relations." A banking executive counted successes in "involvement, teamwork, motivation, communication, as well as measured improvement in quality and customer service, cost savings and revenue enhancement, customer retention and profitability" among the outcomes of the TQM process. Customer satisfaction was a significant TQM boon in the eyes of many respondents, noted by such comments as: "We've won awards from customers and are increasing our ability to meet customer expectations," and "We have improved client retention."

Successful Involvement: Not Easy, But Doable

Managing for continuous improvement and customer satisfaction in a rapidly changing environment is hard work. Results from this study suggest that those looking to TQM for a quick fix are likely to be disappointed. Each stage in the maturation process has its hurdles. "It starts with skepticism and distrust, moves toward doubt about resolve, and ends with frustration over tools," says a seasoned, but satisfied, practitioner.

Patience, leadership, and the ability to nurture a long-term commitment to TQM are crucial to promoting and enlivening the buy-in process. Successful firms are much more likely to use specialized communication campaigns, management review meetings, and focus groups than are respondents who profess dissatisfaction with their firms' progress (see Table 24). Quality executives hope that members of their top management will continue to operate as "quality fanatics," in the words of one respondent. But they are also helping their firms to institutionalize TQM through the use of long-term teams and by linking quality to compensation and promotion.

Despite the frustrations accompanying the major culture change that TQM requires, respondents report encouraging results. Those who experienced success appear to be balancing process and results using a strategy that blends short-, intermediate- and long-term goals. For example:

- Communications and training are used to stimulate cultural change in the short term and to equip managers and employees with the tools of quality and successful role models in the intermediate and long term.
- Teams help to generate cost savings, promote innovation and organize involvement activities initially, and to establish a continuous improvement process over the long term.

Table 24: Summary of Levels of Satisfaction With Progress Toward Involving Employees in TQM
(Grouped by Communication Involvement, Recognition and Performance Measurement Practices)

	*Level of Satisfaction**	
TQM Practice	*Very/ Extremely*	*Somewhat/ Not At All*
Planned Communication Campaign:		
Articles in employee publications targeting:		
All employees	55%	39%
Managers only	44	38
Top management letters/memos	20	12
Special brochures	54	37
Videos	61	40
Conferences/Rallies	75	54
Involvement:		
Periodic meetings with top management	90	53
Formal training	90	71
Short-term teams	93	82
Long-term teams	63	18
Opinion/attitude surveys	83	62
Communication audit	37	15
Focus groups	76	26
Employee suggestion program	61	53
Awards to:		
Individuals	80	62
Teams	83	56
Units/Plants	66	44
Tie quality achievement in middle managers to:**		
Performance appraisal	80	35
Compensation	63	23
Promotion	56	15

* Table base varies; companies responding "moderately" satisfied are eliminated.

** See Table 17 for information on other layers of management.

- Enthusiasm of nonmanagerial employees is harnessed through suggestion programs and teams. Success stimulates increased involvement and helps to persuade those in intermediate management layers that TQM can yield bottom-line results. Recognition and award programs are put in place early and expanded to teams and business units as the TQM process matures.
- To address the "resolve" factor and demonstrate commitment to results, top management is linking quality achievement to performance appraisal and reward systems. This appears to be critical to buy-in at intermediate layers of management. Such ties help to overcome the thinking described by an executive from a consumer goods firm: "Quality is not for me; I don't get any pluses for doing it; there are no minuses if I don't do it."

Survey respondents see TQM as a long-term investment in retaining their firms' competitive edge. Commenting on progress-to-date, a quality executive from an insurance firm notes: "We have achieved higher levels of awareness that Quality is the survival issue for the 1990s and beyond." Yet, even those firms registering the most success with management and employee buy-in are anticipating the next TQM challenge. Involvement, they note, is not an end in and of itself, but the means to realizing larger corporate goals. Ultimately, they hope that the institutionalization of a TQM process can be measured through continuing customer retention, competitive success and profitability.

Appendix: Excerpts From Quality Award Programs

from the *1990 George Westinghouse Total Quality Awards Application Guidelines*

AWARDS PROCESS AND REQUIREMENTS SUMMARY

CATEGORIES

"Best" Total Quality Performance

The Award for "Best" performance refers to the year ending June 1, 1990. Trend information covering several preceding years may be included for the Judges' and Examiners' use, but the Award will be given for the applicant's performance status as of the time of application.

"Most Improved" Total Quality Performance

"Most Improved" applications will be judged on the amount of improvement achieved in two years ending June 1, 1990. Applicants for the "Most Improved" Award must establish a **clear benchmark** from which to report their improvement. Benchmarking data may include a Total Quality Fitness Review, other outside reviews which report against criteria comparable to the Conditions of Excellence or the results of a previous year's report on a GWTQA Application. **In addition to any of the above,** the applicant must clearly establish, using as much specific, quantitative data as possible, where their organization stood at the beginning of the evaluation period, what was done to improve, and where they stand as of June 1, 1990.

ANNUAL AWARDS

An Award plaque, plus a cash award of $200,000 in each category for unrestricted use by the winning organization, in any way approved by the Chairman.

Judges have the option of not making an Award in either or both categories if applications do not merit them.

ELIGIBILITY

The Awards are intended for organizations no smaller than a division or equivalent unit. However, eligibility based on size of the applying organization is to be judged by the Corporate Total Quality Council (consisting of the Chairman's Advisory Council).

Subsidiary company and joint-venture company participation is limited to Westinghouse majority-owned units.

Two candidates in each category may be submitted to the Corporate competition by members of the Corporate Total Quality Council from their respective organizations. Group or Business Unit internal evaluations shall be used to select Corporate candidates.

Corporate winners in each category are ineligible to compete in that category for two succeeding years.

Commercial Nuclear Fuel Division is not eligible to compete in the "Best" category in 1990 because of having won the Baldrige Award in 1988.

The Productivity and Quality Center is ineligible to compete due to its administrative role in the processing of applications for these Awards.

An organization (division or equivalent unit) may not compete in both categories in the same year.

The winner in the "Best" category will receive strong consideration as the Westinghouse candidate in the Malcolm Baldrige Award competition in 1991.

EVALUATION CRITERIA

The applicant's Total Quality improvement efforts will be compared to the Westinghouse Conditions of Excellence for Total Quality by the Board of Examiners. Three factors will be used to evaluate applications: the degree to which the APPROACH used in each criteria is a Total Quality one and is integrated across all functions, the breadth and depth of IMPLEMENTATION of each criteria and subcriteria in all parts of the organization, and the quality and magnitude of the RESULTS achieved. The winner in the "Best" category will be the one demonstrating the best Total Quality performance. The "Most Improved" winner will be the one which has achieved the most improvement during the two years ending June 1, 1990.

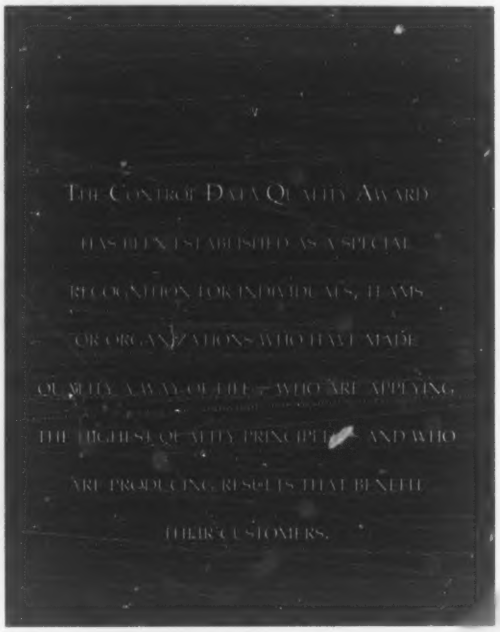
from the *1990 George Westinghouse Total Quality Awards Application Guidelines* (continued)

SCORING MATRIX

TO BE USED IN EVALUATING EXAMINATION CRITERIA

	APPROACH • Total Quality process based. • Breadth of integration across all functions. • Innovation evident in approach.	**IMPLEMENTATION** • Breadth of implementation. (Areas or functions). • Depth of implementation (Ingrained in people).	**RESULTS** • Quality of measurable results. • Payoff of the approach.
100 %	• World-class approach: sound, systematic, effective, Total Quality based, continuously evaluated, refined and improved. • Total integration across all functions. • Proven innovations.	• Fully in all areas and functions. • Ingrained in the culture.	• Exceptional, world-class, superior to all competition; in all areas. • Sustained, clearly caused by the approach.
80 %	• Well developed and tested, Total Quality based. • Excellent integration. • Innovative.	• In almost all areas and functions. • Evident in the culture of all groups.	• Excellent, sustained in all areas with improving competitive advantage. • Much evidence that they are caused by the approach.
60 %	• Well planned, documented, sound, systematic, Total Quality based; all aspects addressed. • Good integration.	• In most areas and functions. • Evident in the culture of most groups.	• Solid, with positive trends in most areas. • Some evidence that they are caused by the approach.
40 %	• Beginning of sound, systematic, Total Quality based; not all aspects addressed. • Fair integration.	• Begun in many areas and functions. • Evident in the culture of some groups.	• Some successes in major areas. • Not much evidence that they are caused by the approach.
20 %	• Beginning of Total Quality awareness. • No integration across functions.	• Beginning in some areas and functions. • Not part of the culture.	• Few or no results. • Little or no evidence that they are caused by the approach.
0 %			

from 1991 *Control Data Quality Award* brochure, Control Data Corporation



THE CONTROL DATA QUALITY AWARD
HAS BEEN ESTABLISHED AS A SPECIAL
RECOGNITION FOR INDIVIDUALS, TEAMS
OR ORGANIZATIONS WHO HAVE MADE
QUALITY A WAY OF LIFE — WHO ARE APPLYING
THE HIGHEST QUALITY PRINCIPLES AND WHO
ARE PRODUCING RESULTS THAT BENEFIT
THEIR CUSTOMERS.

The next step in Control Data's quality journey is to integrate processes for continual improvement into the day-to-day operations of all Control Data businesses. The future of quality at Control Data depends on each business and each employee seeing that quality is directly linked to survival....There is no destination on this journey, but that of ever-higher levels of customer satisfaction.

LARRY PERLMAN
PRESIDENT & CHIEF EXECUTIVE OFFICER
CONTROL DATA CORPORATION

RECOGNITION

Recipients of the Control Data Quality Award will be honored throughout Control Data for their contributions and achievements.

Recipients will be announced at the annual Control Data Quality Symposium in October.

Control Data Quality Awards will be presented to the recipients at a reception and dinner in their honor following the symposium.

SCHEDULE

- Applications must be received by May 15, 1991.
- Examiner evaluation of applications is completed by August 31.
- Site visits to potential recipients are conducted in September.
- Recipients are announced in October.
- Feedback reports are sent to all applicants in October.

from 1991 *Control Data Quality Award* brochure, Control Data Corporation (continued)

HOW TO APPLY

The Application Guideline contains all the information necessary to submit an application for this award. The Guideline contains the application submission form, instructions on how to prepare written and graphical material, the scoring criteria for all categories of evaluation and where to send the completed application.

The Application Guideline and additional copies of the *1991 Control Data Quality Award Brochure* are available from Corporate Quality. Send your request by interoffice mail to HQS14Q or call CN 321-3372, (612) 853-3372, or fax CN 321-5300.

IMPORTANT FACTS ABOUT THE CONTROL DATA QUALITY AWARD

OBJECTIVE

The Control Data Quality Award honors those who use quality tools and practices to achieve or improve customer satisfaction and who provide an inspiration and role model to all.

APPROACH

Key criteria for evaluation of applications includes analysis of:

- ***WHY*** a particular problem or opportunity was chosen and how it addresses the customer's need.
- ***HOW*** the effort was accomplished and what implementation tools and techniques were used.
- ***WHAT*** results were obtained and the significance of those results to the customer, business unit or organization.

IMPLEMENTATION

The award recognizes overall contribution in the following four key areas:

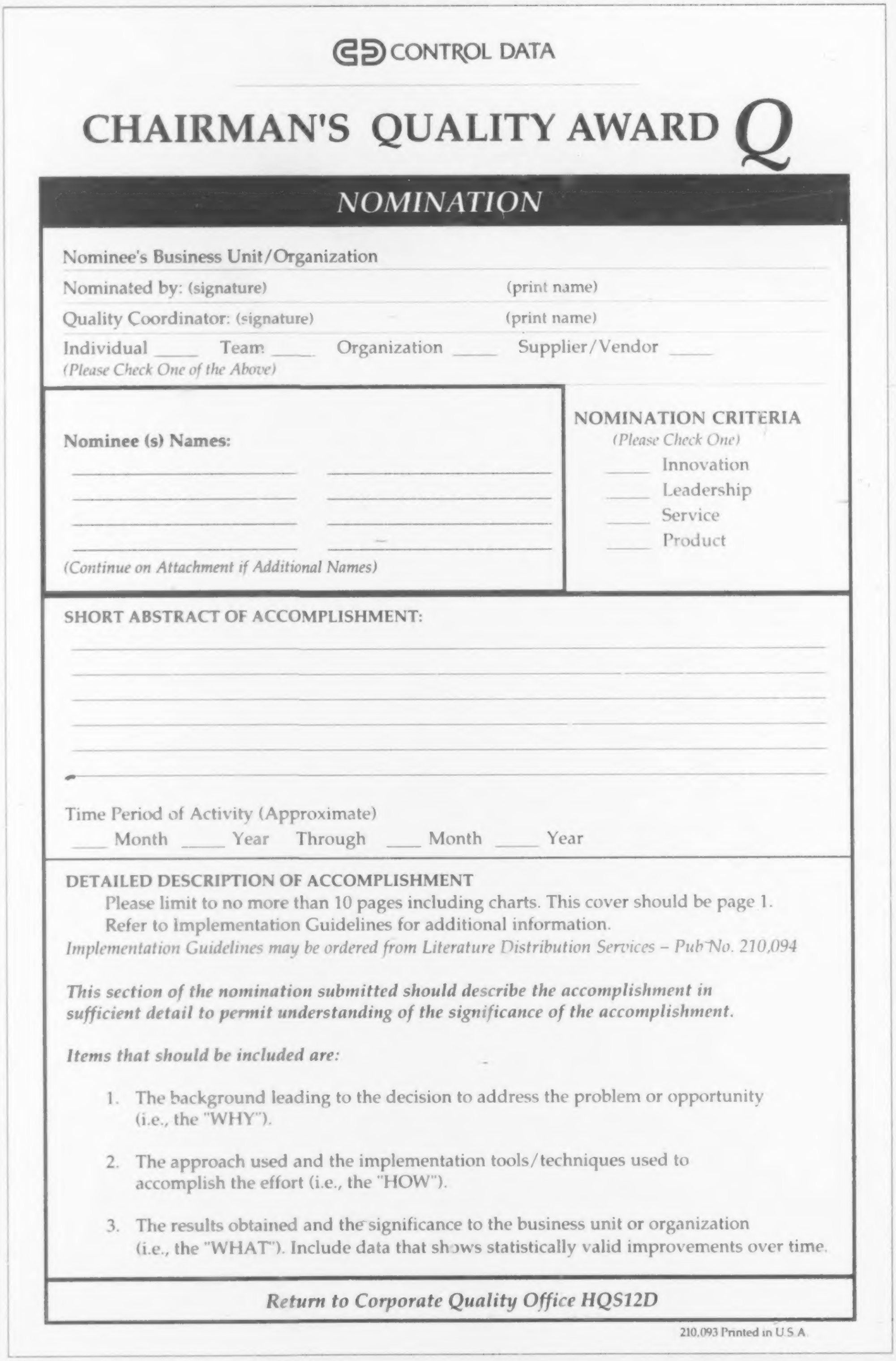
Innovation This award will be made to business units, divisions, organizations, teams or individuals whose activity best represents a significantly innovative quality contribution. Creative and original technical, marketing or administrative achievements and novel process changes or methods are among candidates for awards in this category.

Leadership This award will be made to business units, divisions, organizations, teams or individuals who have exhibited exceptional personal or organizational commitment to continuous quality improvement. These recipients will have earned a reputation for leadership in quality principles and will have demonstrated measurable results.

Service This award will be made to business units, divisions, organizations, suppliers, teams or individuals who achieve outstanding ***service*** quality through the application of quality principles. A key component is customer satisfaction, both internal and external.

Product This award will be made to business units, divisions, organizations, suppliers, teams or individuals who achieve outstanding ***product*** quality through the application of quality principles. A key component is customer satisfaction, both internal and external.

Application Form, Control Data Corporation



CONTROL DATA

CHAIRMAN'S QUALITY AWARD Q

NOMINATION

Nominee's Business Unit/Organization

Nominated by: (signature) (print name)

Quality Coordinator: (signature) (print name)

Individual ____ Team ____ Organization ____ Supplier/Vendor ____
(Please Check One of the Above)

Nominee (s) Names:

(Continue on Attachment if Additional Names)

NOMINATION CRITERIA
(Please Check One)

____ Innovation
____ Leadership
____ Service
____ Product

SHORT ABSTRACT OF ACCOMPLISHMENT:

Time Period of Activity (Approximate)
____ Month ____ Year Through ____ Month ____ Year

DETAILED DESCRIPTION OF ACCOMPLISHMENT

Please limit to no more than 10 pages including charts. This cover should be page 1.
Refer to Implementation Guidelines for additional information.
Implementation Guidelines may be ordered from Literature Distribution Services – Pub No. 210,094

This section of the nomination submitted should describe the accomplishment in sufficient detail to permit understanding of the significance of the accomplishment.

Items that should be included are:

1. The background leading to the decision to address the problem or opportunity (i.e., the "WHY").
2. The approach used and the implementation tools/techniques used to accomplish the effort (i.e., the "HOW").
3. The results obtained and the significance to the business unit or organization (i.e., the "WHAT"). Include data that shows statistically valid improvements over time.

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Related Conference Board Publications

Quality Training: What Top Companies Have Learned, Report No. 959, 1991.

Global Perspectives in Total Quality, Report No. 958, 1991.

Making Total Quality Happen (Conference highlights), Report No. 937, 1990.

The Road to Total Quality, Research Bulletin No. 239, 1990.

Current Practices in Measuring Quality, Research Bulletin No. 234, 1989.

Total Quality Performance (Conference highlights), Report No. 909, 1988.

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The Conference Board

Report Number 977

Global Presence and Competitiveness of U.S. Manufacturers

Conference Board proprietary database of
U.S. manufacturers shows how:

- *global presence aids survival, growth and profits*
- *firms with fewer competitors do better*
- *R&D abroad goes with superior performance*
- *Pacific Rim operations mark fastest growing companies*

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Global Presence and Competitiveness of U.S. Manufacturers

by Charles R. Taylor

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From the President

The decade of the 1980s was one of enormous change for American manufacturers; foreign competitors entered U.S. markets while U.S. firms expanded abroad. This increase in international activity was prompted in part by efforts to focus on product market segments that were narrowly defined while achieving economies of scale. Leadership in global markets became increasingly important for long-term growth and stability.

But how active are U.S. manufacturers in the global marketplace? Is it necessary to operate globally to improve growth and profitability? What are the world markets in which U.S. firms operate?

This study, directed by Gail D. Fosler, Vice President and Chief Economist of The Conference Board, addresses these and other strategic issues using a proprietary Conference Board database. This database describes the extent and type of international activity of U.S. multinationals over the decade of the 1980s and measures their sales and profitability relative to their domestic counterparts.

The dynamics of the 1990s may be different from the 1980s, making success abroad more difficult to achieve. The political environment may not be as welcoming to free trade, and the global marketplace is certain to become increasingly crowded with foreign competitors. Yet, as this study shows, global involvement is a gateway to both profitability and growth.

PRESTON TOWNLEY
President and CEO

Definitions and Data Interpretation

I. Definition of the Database

This study is based on The Conference Board's U.S. Manufacturing database. This database covers the universe of all companies publicly quoted on U.S. exchanges—and therefore registered with the SEC—with sales exceeding $10 million. It is developed, in large measure, from the Multinational Register survey that has been conducted annually by The Conference Board since 1978. This survey was supplemented with information from 10Ks and annual reports in order to provide a data set for all companies in the universe. This database represents the vast majority of major U.S. manufacturers (i.e., those with more than 500 employees) and well over two-thirds of total worldwide U.S. manufacturers' sales. As such, the database is a rich source of information about the experience of U.S. manufacturers during the 1980s.

Included in the database are the names and addresses of the companies; growth in U.S. and worldwide sales; 3-digit Standard Industrial Classification (SIC) codes for industry activities; whether or not they export and how much; countries and regions in the world in which they are active; and the type of global activity they conduct (e.g., joint ventures, licenses, research and development, and foreign production plants). In addition, financial measures such as earnings per share and return on total assets (also derived from 10Ks and annual reports) are included in the database. These measures were provided by Media General Financial Services.

II. Data Quality and Limitations

Data from the database for the years 1979 and 1989 were used as the basis of this study. Data quality contains some limitations regarding accuracy. Company responses, for example, were accepted at face value and not checked against company documents to verify accuracy. Moreover, some companies did not report certain kinds of activity—such as location or type of country activity or joint ventures abroad—so that some activity counts are low. Also, the financial data refer to stocks not companies; and, in a few cases, data on one class of stock did not match those on another. Finally, companies are considered "survivors" and are compared over time only if they are reported under the same corporate identity. If a company remained under the same corporate ownership but changed its name during the decade, the database would count it as two different firms.

Much of the statistical analysis is aggregated for presentational purposes to the 2-digit SIC level. A listing of 2- and 3-digit SIC industries is contained in Appendix Tables 1 and 2. It should be noted that 3-digit SIC classes represent a high level of aggregation, and SIC classifications often do not conform to either product types or product markets. However, the SIC designations are suggestive in a general way of the type of activities and industries in which companies are involved. Appendix Table 3 lists the countries and regions covered in The Conference Board database.

III. Definition of Terms

What are some of the terms used in the study and how are they defined? For example, what does it mean to be "multinational"? What is "fewness" and how is it measured? How does this study gauge "success"?

The Conference Board database defines as **"multinational"** firms that have foreign plants or foreign sales; they may also engage in exports from the United States, joint ventures, or other types of alliances, but these activities alone are not enough to qualify as multinational. These firms are considered to be domestic.

For the purpose of this study, multinational firms are those which have extended their organization and other operations to other countries. They may be "global" in the sense that they have a "borderless" corporate culture and they tailor their production and markets to local needs; but the data from The Conference Board database do not provide this sort of organizational insight. The data simply identify the location of their worldwide operations, but do not describe them. Therefore, it is impossible to determine whether these multinational firms operate strategically as truly "global" firms. Clearly, these firms are more than merely international, however, in that they have committed their organizations to operate "on the ground" in foreign countries rather than to hold these markets at arms' length.

An industry has **"fewness"** when there are a small number of U.S. firms operating in it. An industry that has "fewness" may also be highly concentrated (in the sense that a small number of firms may account for a large share of sales), but a degree of concentration cannot be measured within the limitations of this database.

"Success" in this study is measured in terms of sales growth and shareholder return. Good management, innovation, and a focus on quality are treated as factors that contribute to superior performance rather than as "success" measures themselves.

Specifically, profits and sales growth are measured in the following way:

- **profits:** earnings before interest and taxes divided by total assets, averaged over the five years 1986 to 1990—a measure of a company's sustained efficiency.
- **sales growth:** growth of dollar value of worldwide sales over the 10 years 1979 to 1989—a measure of a company's sustained dynamism.

IV. Estimating Sales by Industry

In The Conference Board survey, companies reported their worldwide sales and the 3-digit SIC industries in which they were active. The level of sales by industry in each company was not reported. For this study, sales are assumed to be divided equally among the 3-digit industries in which a company was active.

Although this would seriously misrepresent the distribution of worldwide sales in a particular industry for any single firm, it is unlikely to cause major distortions in the relative sales among industries at the 2-digit industry level. If there were any systematic bias, the tendency would be to overstate sales in small industries and, therefore, underestimate the extent of structural change depicted in Chart 2. However, to the extent that large firms have only a very small share of their activity in one or a few SIC groups, the process of allocating sales equally across SICs may create significant distortions.

The SIC classifications were revised in 1987. In particular, computers were shifted from SIC 35 (machinery, except electrical) to SIC 36 (electric and electronic equipment). This may well account for a significant part of the growth in SIC 36 as shown in Chart 2, but it is unlikely to change the overall pattern, as discussed in the text.

V. Estimating Sales by Region

The estimates of the distribution of sales across regions and countries is based on the countries in which multinational firms reported they were active. First, a company's sales were equally divided between the countries in which it reported operations. Each company's sales in that country were then added to create a country total and the countries in that region were added to develop a regional total.

Just as the method for dividing sales equally across industries may lead to an overestimate for the sales share of small industries, so too this method may lead to an overestimate of the sales share in small countries. Moreover, the same problems arise as in distributing sales equally by industry where large firms have only minor operations in a given country. Indeed, at first glance, it seems there is a greater danger of misrepresenting the true distribution of worldwide sales because companies may operate in many countries without selling in them through regional distribution, offshore manufacturing, or overseas research and development activities. Fortunately, most of the study relies on the specific regions or the number of countries in which a firm is active, and these are reported in a straightforward manner in the database.

Still, to test for possible bias in this method for estimating sales by region, actual data on country sales from the annual reports were compared with the study method. The actual distribution of worldwide sales for a sample 40 companies selected randomly from The Conference Board database was compared to the distribution that would have resulted from the study method. While the results from this sample conform closely to the results of the study method, the sample does suggest that companies have a larger share of their sales in the Pacific Rim, and a much smaller share of sales in South Asia than the study method estimates. In the sample, the relatively small share of sales activity in South Asia, compared with the study method, is probably due to the fact that most companies produce but do not sell in South Asia.

VI. Measuring "Fewness"

"Fewness" is the average number of competitors a company faces within The Conference Board universe, across the 3-digit SIC industries in which it is active. A high value means that it has many competitors; a low value means that there are few competitors. "Fewness" is measured by estimating the number of competitors in each 3-digit SIC class and then averaging them at the 2-digit level.

Executive Summary

The 1980s was a decade of dynamic change for U.S. industry. Many businesses failed, merged, or thrived and developed as their traditional lines of business evolved. This report identifies some of the common characteristics of U.S. manufacturing firms, the extent of their global involvement, and some of the strategies they used to extend their global operations not only to survive but also to succeed during the 1980s.

The vast majority of U.S. manufacturers have some form of global presence — through exports, strategic alliances, joint ventures, or as part of a committed strategy to sell in foreign markets or locate production plants abroad. Unfortunately, there are few generally acceptable definitions to describe businesses according to their degree of commitment to the global marketplace. This is hardly surprising in view of the fact that "multinationality" has many dimensions and may be considered from any of several perspectives, including economic, political, legal and managerial.

For the purpose of this study, however, firms that have either foreign sales or production plants are defined as "multinational"—all others are considered domestic even if they export or engage in some form of international alliance—such as joint ventures or license arrangements. In a broader sense, many of these firms may be "global" in that they are organized and managed without respect to national borders, and tailor and target their products to local markets. However, the study data provide information only on the pattern of company activity and do not offer many insights into management or product strategy.

Looking ahead to the decade of the 1990s, change and the expectation of change appear to be two of the few strategic certainties. This study documents the changing environment for U.S. manufacturers during the past decade, and distills some strategic lessons from the experiences of successful firms for the decade ahead. Discussion is based on a proprietary Conference Board database of all publicly traded U.S. manufacturing companies with annual sales over $10 million. Key findings are:

- **The 1980s was a turbulent period.** Of the 1,928 firms in the universe in 1979, nearly 1,200 disappeared through failures, mergers, acquisitions or through being taken private or other changes in their corporate identity. However, by 1989, another 748 had appeared from divestitures, going public or growth past the $10 million sales mark.
- **U.S. manufacturing is increasingly global.** Firms with foreign plants or sales (i.e., multinational firms), accounted for 53 percent of the total number of firms and 89 percent of the worldwide sales of all companies in the The Conference Board universe in 1989.
- **U.S. manufacturers extended their global reach during the 1980s.** Over half of all companies that reported country activity in both 1979 and in 1989 increased the number of reported countries in which they operated. Among the 444 multinational companies that survived the decade, those operating in 10 or more countries rose even faster — from 15 to 20 percent between 1979 and 1989.
- **Global reach is important to survival.** During the 1980s, multinational companies were 50 percent more likely to survive under the same corporate identity than were domestic companies.
- **Multinational firms are more profitable and grow faster.** Among the 20 major industry categories covered in the study, multinational firms grew faster than domestics in 19 industries; in 17 they were more profitable.
- **Global markets are increasingly characterized by "fewness" (i.e., there are only a few producers in each industry segment).** The average number of all competitors in specific industry segments dropped 45 percent—from 53 to 28 at the 3-digit SIC level—between 1979 and 1989.

- **"Fewness" is generally associated with increasing profitability.** A firm that achieves market leadership and has few competitors is likely to be more profitable than one which typically has many competitors or a small market share. This is true for both domestic and multinational firms. But the trend toward narrowly focused industry segments and markets often requires a global scope in order to achieve sufficient economies of scale.
- **The dynamic Pacific Rim was the single most important region for growth during the decade.** The Pacific Rim accounted for over 16 percent of worldwide sales in 1989 compared with 12 percent in 1979—while the share of companies active in this region grew from 31 percent in 1979 to 41 percent by 1989. Not only have U.S. companies extended their operations into the Pacific Rim and Southeast Asia, but they also have been rewarded in terms of superior sales growth for doing so. The Pacific Rim and Europe were the only major regions in which **both** the share of firms and the share of worldwide sales increased.
- **Research and development abroad is closely related to both growth and profitability.** Joint ventures and licensing are important strategies, and both are profitable—although each may have different implications for growth. Nonetheless, of all the various types of international activity, R&D abroad stood out as the distinguishing characteristic of successful multinational firms.
- **Outstanding firms, that is those firms that are both the fastest growing and most profitable, combine many of the above characteristics.** These firms are large and overwhelmingly multinational; they have more than twice the share of their chosen markets than the average firm. They are concentrated in the capital goods and electronics industries; they are more than twice as likely to have operations in the Pacific Rim, and they are also more active than average in Europe. They frequently engage in R&D outside of the United States. These companies do, however, appear to compete in markets with almost twice the number of competitors as the average firm. It is unclear whether this lack of "fewness" is due to the limitations of data, which identify industries only at the 2- and 3-digit SIC level, or whether this is a true representation of the highly dynamic character of the industries in which these companies are found.

Many of these findings are not surprising. Still, the growth and profitability of companies active in the global marketplace underscore the importance of international competitiveness to sustaining a vital and viable U.S. manufacturing base. Indeed, the desirability and ease of establishing overseas operations places the United States in direct competition with other countries and regions, particularly in the Pacific Rim, for R&D and other high value-added activities.

Accordingly, this study has important implications for government policy. To the extent that the number of competitors in specific product markets is shrinking (i.e., these markets are characterized by "fewness"), global markets are increasingly driven by the strategic actions of individual competitors rather than the more general market forces of demand and price.

Subsidies or market barriers may therefore prevent U.S. companies from fully exploiting their technological advantage; may reduce the rate of return on U.S. R&D; and, in those cases in which products are moving up a technological ladder, may force U.S. companies out of important markets altogether. Both the sharp drop in the number of U.S. firms in The Conference Board universe over the decade and the even greater decline in the number of markets in which the average firm competes, suggest the extent of the competitive pressures U.S. manufacturers face.

These observations should not be interpreted as a prima facie endorsement of government intervention. Global markets, particularly in high-technology products, are dynamic while government policies are inherently static. Nonetheless, this study does weaken an important premise for limited government action—the notion of perfectly competitive global markets.

"Going global" may be more difficult in the future, depending on the results of the current round of GATT negotiations, and how relationships between the three emerging trade blocs—Europe, North America and the Pacific Rim—develop. Moreover, a global presence does not guarantee success; successful firms are those that have the human and capital resources and vision to be a player in world markets. Still, given the strong relationship between global presence and profitability and growth, even the most successful U.S. firms, like their foreign counterparts, will have to continue to confront head-on the competitive issues of product quality, segmentation, regional concentration and international organization—including the extent of R&D activities abroad—not only to succeed but also to survive in the years ahead.

The Forces Shaping Strategy

Global presence is not new to U.S. business. U.S. companies have always searched out opportunities abroad, particularly in the post-World War II period. By 1979, just under half of all U.S. manufacturers in The Conference Board's universe had important operations or activities overseas. These companies accounted for over 80 percent of the worldwide sales of the companies covered in the database. (See box, sections I, II and III, page 6, for discussion of the database and definition of terms used in the study.)

The Global Evolution of the 1980s

Still, U.S. companies continued to expand abroad during the 1980s and multinational companies continued to increase their standing within the U.S. manufacturing community. By 1989, 53 percent of all U.S. manufacturers in The Conference Board universe were global, accounting for 89 percent of total worldwide sales. Over half of all companies reporting country activity had increased the number of countries in which they operated.

Why were the 1980s an important decade for global activity? First, the technological, political, economic and structural changes during the 1980s encouraged globalization. For example:

- **Technology:** Transportation and communications costs fell dramatically and international operations became much easier to organize.
- **Politics:** Among the industrial countries, the political spectrum moved towards the right and narrowed; trade union influence diminished in many countries and labor relations improved. At the same time, many newly industrializing countries liberalized their political systems, promising greater political stability in the future. There were few parallel developments in most of the lower income developing countries until recently.
- **Exchange rates:** Increasing global trade during the 1980s meant that any company operating in more than one major currency had a powerful reason to invest abroad to try to match the currencies of its costs to the currencies of its revenues. That reduced the risk of losses solely due to currency movements.
- **Standards:** Different, more demanding technical standards were increasingly set both by customers and regulators. National and regional customer specifications, tastes, and requirements differed and evolved at different speeds. A company that kept up with developing demands in many national markets was more likely to be at the forefront of innovation. Firms with operations in Europe, for example, had a say in new industrial standards set by the European Community—providing an advantage over firms which only exported to that market.

Second, and probably more important, a global presence became increasingly important to economic survival. The 1980s were turbulent for U.S. manufacturing. During the decade, many companies failed, went private, or were acquired and merged. From 1979 to 1989, only 38 percent (or 742) of the manufacturing companies in The Conference Board universe at the beginning of the decade survived under the same corporate identity (see Chart 1). Some 750 new firms, however, did appear as a result of larger company divestiture, new incorporations and growth. (Appendix Table 4 shows the mix of domestic and multinational firms in The Conference Board universe in 1989 and the proportion active in each industry.)

Chart 1: A Decade of Change

	1979		1989		Survivors[1]	
	Number of Firms	*Percent of Sales*	*Number of Firms*	*Percent of Sales*	*Number of Firms*	*Annual Percent Growth of Sales*
TCB Universe	1,928	100.0%	1,490	100.0%		
Multinational[2]	941	82.1	786	89.4	444	8.8%
Domestic[3]	987	17.9	704	10.6	298	5.5
Survivors[1]	742	54.1	742	80.3	742	8.4

[1] Survivors are those firms operating with the same corporate identity in 1979 and 1989.

[2] Multinational firms are those with foreign plants or sales; exports alone are not sufficient.

[3] Domestic firms are those that are not multinational.

Reference: Appendix Tables 4 and 9

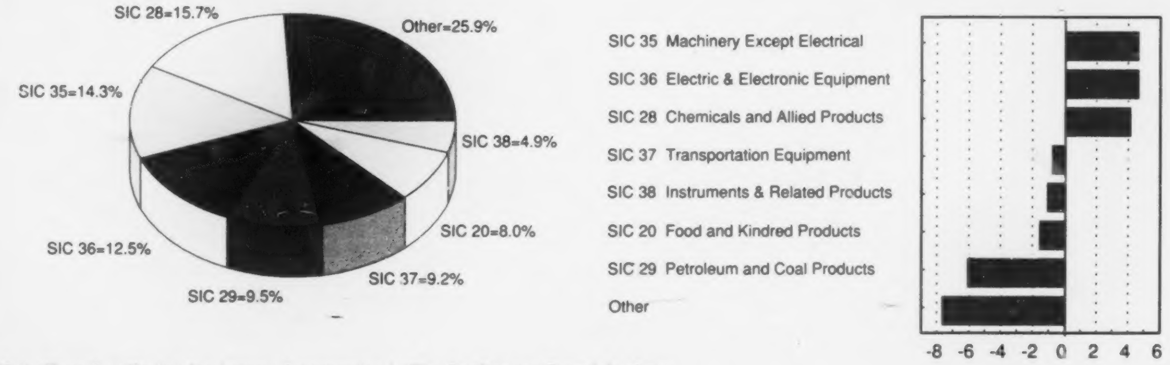
Over the decade, the total number of firms in The Conference Board universe shrank by about 20 percent to 1,490 companies. Total worldwide manufacturing sales for companies in the universe grew at only a 2.4 percent annual rate. Notably, survivor firms' sales grew at an 8.4 percent annual rate—almost four times as fast as the average growth in the universe, and about one-and-a-half times as fast as growth in domestic shipments for U.S. manufacturers as a whole.

During this period, a global presence was important to survival. Multinational firms not only grew faster but were also 50 percent more likely to survive the decade than domestic firms. The annual sales growth of surviving multinational firms was 8.8 percent compared with 5.5 percent for the surviving domestic firms. Just under 10 percent of domestic firms located plants or developed a local sales base abroad during the decade. Of the survivors at the end of the decade, 60 percent were multinational, whereas only 50 percent of firms had been multinational in 1979.

Indeed, given the apparent benefits, it is curious that globalization has not proceeded more rapidly. This may suggest that there are barriers to moving abroad or that a global presence, itself, does not confer success; rather, only companies that have sufficient human and financial resources can operate abroad successfully.

Third, manufacturers became increasingly multinational because both product markets and product technologies often required global scope. Production technologies were upgraded, more technology was embodied in products, and the mix of goods produced moved up the technology scale. Chart 2 shows that the

Chart 2: The Increasing Importance of U.S. High-Tech Industries



What U.S. Manufacturing Does...

(Percent Distribution of 1989 Sales by Industry Group)

...And How It Got There

(Percent Change in Share of Worldwide Sales between 1979 and 1989)

Note: Based on the total universe of companies in The Conference Board database.

Reference: Appendix Table 5

three broad groups which include many high-technology industries increased their share of total worldwide sales by 13 percentage points between 1979 and 1989. (See box, section IV, page 7, for discussion of the method of distributing sales by industry.)

During the 1980s, these three industry groups accounted for virtually all of the growth in sales and, by the end of the decade, these industries accounted for about 43 percent of all U.S. manufacturing worldwide sales covered in The Conference Board universe. This underscores the general importance of high-technology industries for U.S. manufacturing. (Appendix Table 5 shows the change over the decade in the number and composition of sales for all 20 of the 2-digit industry SIC classes.)

The Changing Global Pattern of U.S. Manufacturing

U.S. manufacturing firms are gradually extending their global reach. The average U.S. manufacturer, active in only four countries in 1979, was active in close to five countries in 1989 (see Chart 4). Among all companies reporting multinational activity in either year, the share operating in more than 10 countries increased from 9 percent to 13 percent. The number and geographic breadth of very large companies (in terms of sales) also increased during the decade. The largest companies operated in just over 50 countries in 1989 compared with only slightly over 30 in 1979. Among multinational companies only, the share of surviving companies in the universe operating in more than 10 countries increased from 15 percent in 1979 to 20 percent in 1989.

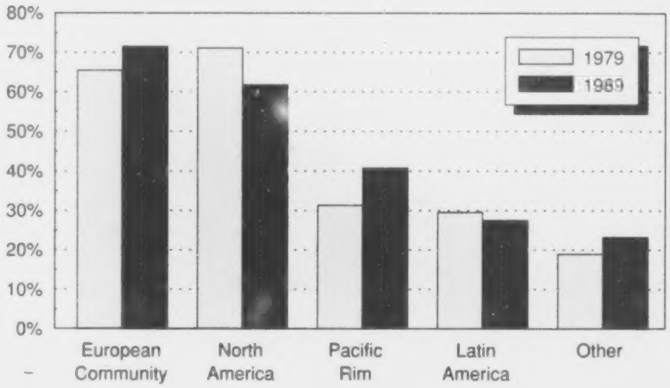
The most important global market for U.S. manufacturers is the European Community. More than 70 percent of multinational firms from The Conference Board universe operate in Europe, which accounts for about 42 percent of total worldwide sales. (See box, section V, page 7, for discussion of method of distribution of sales by region.) Not surprising, the two next most important regions are North America (Canada and Mexico) and the Pacific Rim. These are the regions that are either natural economic neighbors, as is the case with Canada and Mexico, or economically dynamic, as is the Pacific Rim.

Chart 3 shows that, among these regions, the Pacific Rim stands out as the one in which U.S. manufacturing activity has grown fastest both in terms of number of firms and share of worldwide sales. The share of firms operating in the Pacific Rim rose from 31 percent in 1979 to just over 41 percent in 1989 while the share of worldwide sales in the region increased from about 12 percent to 16 percent. (Appendix Table 6 shows the changing presence of U.S. firms by region and the pattern of their activity.)

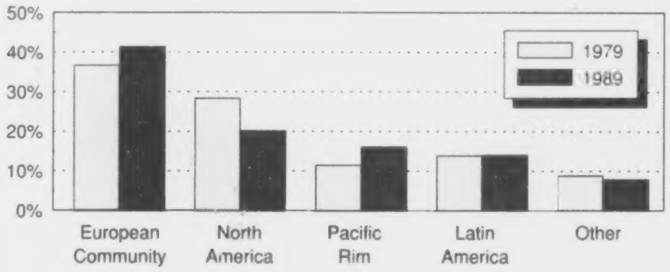
Indeed, U.S. firms appear to have shifted their geographic focus away from Europe, Latin America, Canada and Mexico in favor of the Pacific Rim and other developing countries. South Asia (which includes such countries as India, Pakistan, Burma and Bangladesh) and Africa are two regions which were never particularly important to the great majority of U.S. manufacturing firms. Yet, while both regions have lost share in worldwide sales to the Pacific Rim during the decade, the proportion of U.S. firms reporting activity in these regions has actually increased. Data taken directly from a sample of annual reports, however, suggest that the U.S. companies are more likely to have production plants than substantial direct sales within the developing world.

Chart 3: The Pattern of Company Activity

Percent of Firms Active in the Region



Percent of Worldwide Sales



Note: Based on The Conference Board universe of companies that report country activity

Chart 4: Industry Focus and Geographic Spread Increase

	1979	1989
Market Focus		
Number of Firms	1,924	1,490
Total Worldwide Sales ($ billion)	1,743	2,162
Average Sales per Firm ($ million)	906	1,451
Number of 3-digit SIC Industries per Firm	4.3	2.4
Average Sales per Firm per Industry ($ million)	211	605

Note: Based on The Conference Board universe of all companies that report sales data.

	1979	1989
Geographic Spread		
Number of Firms Reporting Country Activity	1,304	669
Average Number of Countries per Firm	4.05	4.73
Average Sales per Firm per Country ($ million)	300	593
Distribution of Companies Number of Countries:		
1-5	79.8%	74.7%
6-10	11.3%	12.6%
Over 10	8.9%	12.7%

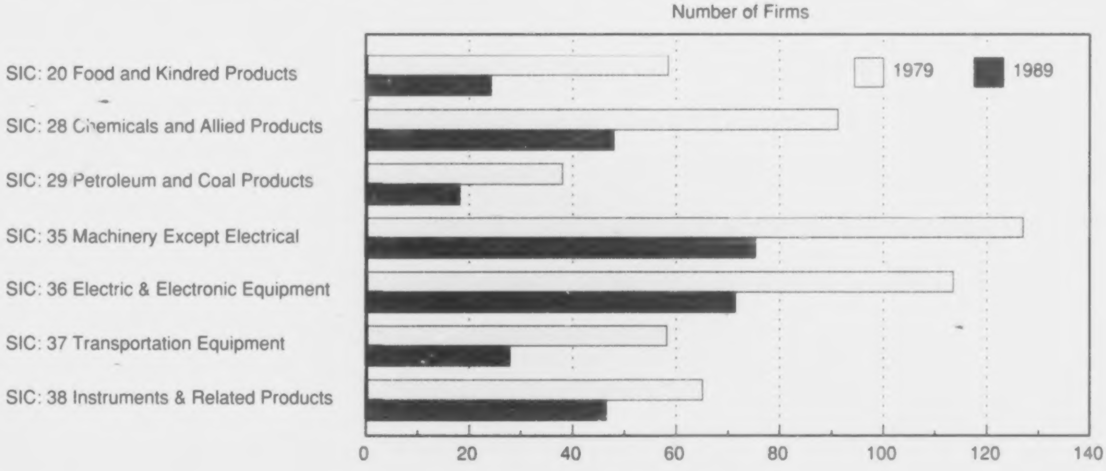
Note: Based on The Conference Board universe of companies that report country activity.
Reference: Appendix Tables 5 and 6

"Fewness"

If the first major trend of the 1980s among U.S. manufacturers was globalization, the second was **"fewness."** "Fewness" characterizes markets that have a limited number of producers. The concept is not new and it is advocated as a strategic quality firms should seek by segmenting existing markets or creating from scratch new product niches. The sharp decline in firms in every major industry group, however, reflects the very broad extent to which this trend toward "fewness" exists both at home, among domestic firms, and abroad. In 1979, U.S. manufacturers competed in an average of four 3-digit SIC industries compared with only two in 1989. Chart 4 shows that in 1989 average sales in each 3-digit industry by a typical firm also increased by threefold compared with the beginning of the decade—$211 million rose to $605 million.

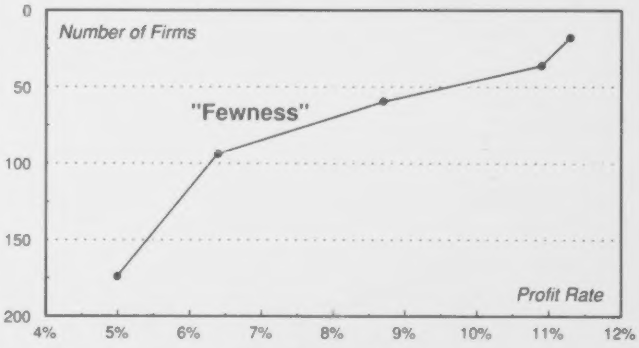
Moreover, the number of firms active in each 3-digit industry was cut almost in half—from 53 in 1979 to 28 in 1989. (See box, section VI, page 7, for discussion of how the number of competitors a firm faces with a given industry is calculated.) The decline in the number of competitors in each industry group was much greater than the 23 percent drop in the total number of firms in the universe. The consolidation occurred in all major industries, although to a lesser extent in machinery and electronics than in other industries (see Chart 5). Appendix Table 7 shows the extent to which the number of competitors declined in all 2-digit industry groups between 1979 and 1989.

Chart 5: The Emergence of "Fewness"



Note: Chart shows the average number of firms competing in each 3-digit SIC classification, within each 2-digit industry group. Data based on all companies in The Conference Board universe.

Chart 6: "Fewness" Fuels Profits



Note: Based on all firms in The Conference Board universe.

A typical U.S. manufacturer in The Conference Board universe also rapidly increased its presence in selected markets. Indeed, the threefold increase in average sales per industry implies that the average firm sustained sales growth of over 10 percent a year **in its chosen markets**—well above the annual growth in total worldwide sales for the universe as a whole.

Thus, the decline in the average number of competitors in a given industry segment and the remarkable sales growth in the remaining markets both illustrate the trend toward "fewness" among U.S. manufacturers. Moreover, although 3-digit SIC definitions are narrow compared with their 2-digit counterparts, they are still exceptionally broad compared with the definitions with which most company marketing departments would be concerned. There are between three and four 4-digit industries in a typical 3-digit SIC category. Therefore, a typical U.S. manufacturer in The Conference Board universe, which has 28 domestic competitors at the 3-digit SIC level, will average seven to ten U.S. competitors at the 4-digit level. Of course, there are many markets in which U.S. firms do not compete. But, product markets are typically defined at the 6- or 7-digit SIC level, which would further reduce the number of competitors considerably. Of course, in those product groups where U.S. firms are present, foreign firms would add to the total number of competitors a firm faces worldwide.

Among superior performers—who prefer proprietary products that are well differentiated, command a quality premium, and/or can be produced by a proprietary manufacturing process that confers significant cost advantages—"fewness" is linked to profits (see Chart 6). As the number of U.S. firms competing in a given market declines—and the characteristic of "fewness" increases—profitability rises.

The actual numbers in Chart 6 are less important than the concept. As mentioned earlier, the 3-digit SIC level is a relatively high level of aggregation for most product lines. If it were possible to disaggregate to more refined industry classes, the relationship between "fewness" and profitability would undoubtedly be even stronger.

"Fewness" is the result, in part, of diversity among products and uniformity across national markets. Diversity has increased as products have grown more complex and differentiated and as product life cycles have shortened. At the same time, national markets have become increasingly similar, especially in the industrial countries, and particularly for intermediate goods. Companies have been able to expand their global presence and realize economies of scale as a result of more flexible manufacturing and distribution methods and better communications and transportation technologies.

The Global Challenge

The history of U.S. manufacturing during the 1980s shows that it pays to be global in terms of both superior profitability and growth. When firms fully accept the challenge abroad and search out suppliers and customers without regard to national boundaries, they benefit from being more alert to competitive threats wherever they might originate.

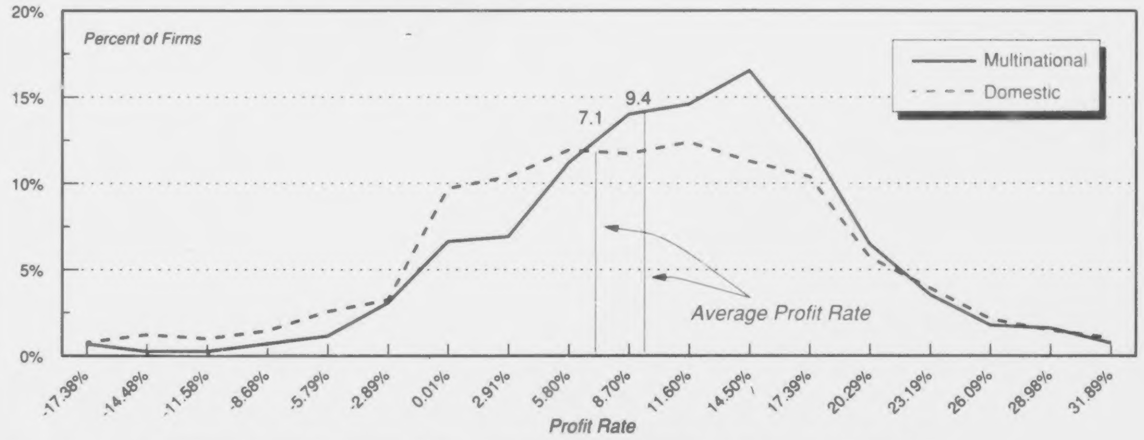
Charts 7 and 8 compare the profitability for multinational versus domestic firms in the aggregate and for key industries. Not only are multinational firms more profitable than domestic firms on average, but they also out-perform domestics in 17 of the 20 major industry groups. Chart 8 further illustrates the impressive performance of multinational companies in important, often high-technology industries, which account for virtually all of the net growth in U.S. manufacturing sales worldwide.

Charts 9 and 10 are counterparts to Charts 7 and 8, but compare growth in sales rather than profitability. They show an even clearer tendency toward the superior performance for multinational companies relative to domestics. They grew faster in 19 out of 20 of the 2-digit SIC industries. Appendix Tables 8 and 9 compare the growth and profitability for multinational versus domestic firms in all 2-digit SIC industry groups.

Of course, it is possible to remain domestic and be successful. In printing and publishing, for example, domestic firms have generally out-performed multinational companies. Moreover, the distributions shown in Charts 7 and 9 make it clear that many domestic firms grew faster and are more profitable than their multinational counterparts. Still, there is a strong tendency toward better performance among multinational companies.

Chart 7: Being Multinational Pays...

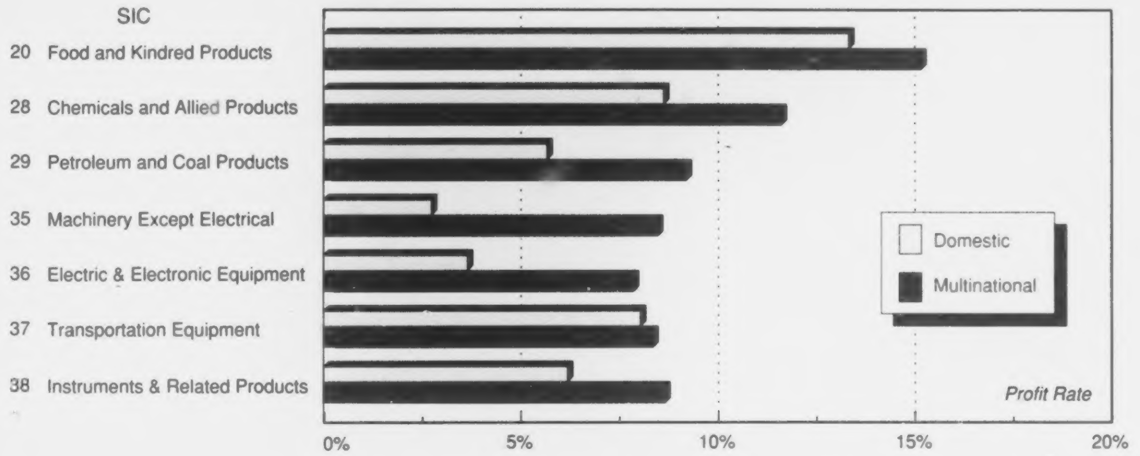
Frequency Distribution



Note: Based on all companies in The Conference Board universe in 1989. Average return on assets 1986 to 1990.

Reference: Appendix Table 8

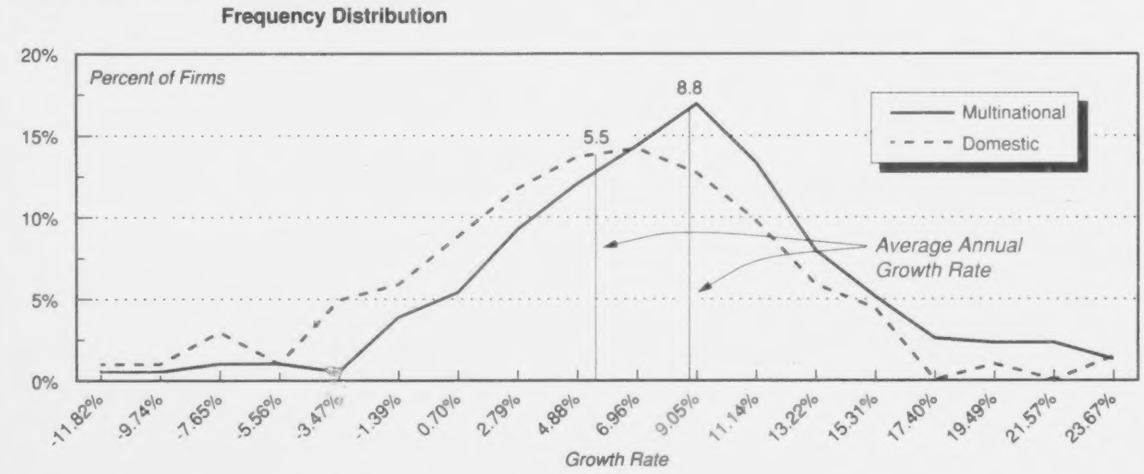
Chart 8: ...In All Major Industries



Note: Based on all companies in The Conference Board universe in 1989. Average return on assets 1986 to 1990.

Reference: Appendix Table 8

Chart 9: And Spurs Growth...



Note: Based on all companies in The Conference Board universe in 1989.

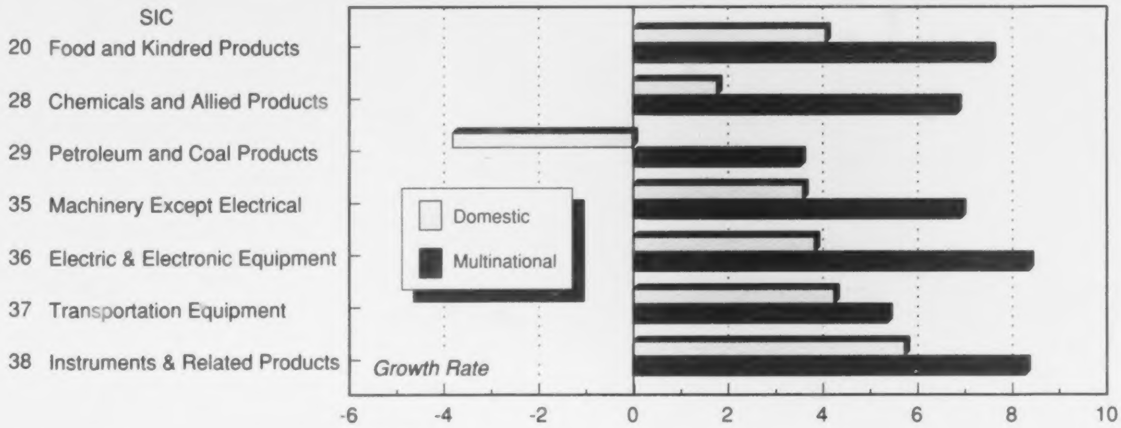
Reference: Appendix Table 9

In part, the success of multinational firms is due to the changing geography of markets. With the exception of differences in industrial standards and tastes, national boundaries matter less and less. Transportation technology has opened up more population and wealth concentrations, creating more market opportunities. Marketing regions are now as likely to spill over from one country to another as they are to divide up neatly according to national boundaries.

Chart 11 shows that average company profits and growth vary depending on the regions in which they are active. The Pacific Rim stands out as the region where activity is important for growth of U.S. companies. According to the chart, U.S. companies not only have extended their operations into the Pacific Rim, but they also have been rewarded in terms of superior sales growth for doing so. The sales growth in South Asia is probably more of an artifact of the allocation method

Chart 10: ...Across All Major Industries

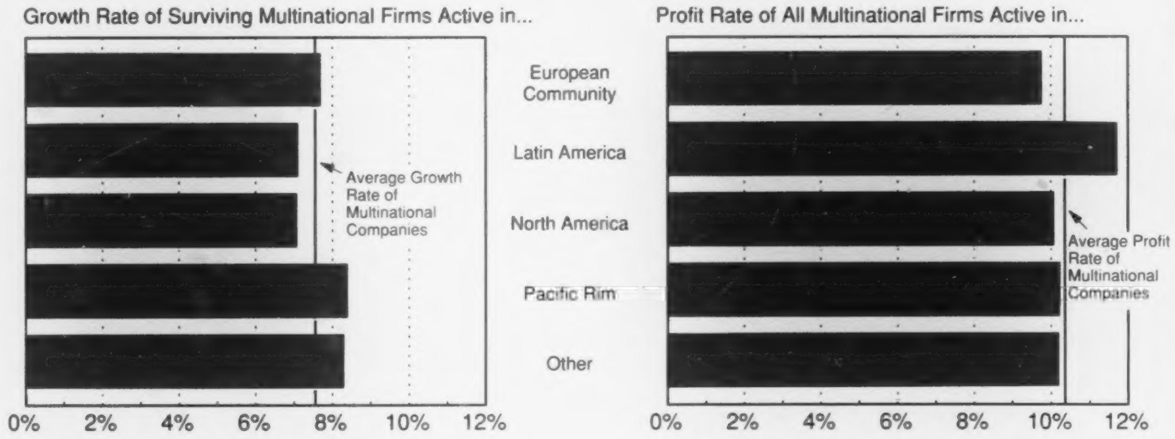
Average Annual Percent Change, 1979 to 1989



Note: Based on all companies in The Conference Board universe in 1989.

Reference: Appendix Table 9

Chart 11: Winners and Losers Among Regions, 1989



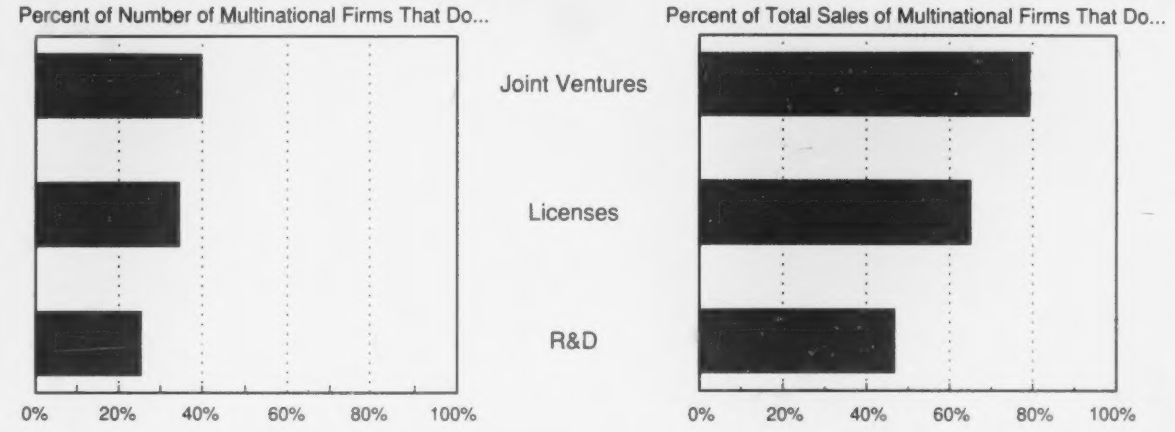
Note: The above chart is based on The Conference Board universe of surviving multinational firms in 1989.

Note: The above chart is based on all multinational firms reporting activity by country in 1989. Average return on assets from 1986 to 1990.

for distributing sales. A sample of the annual reports of companies in the universe suggests that most companies only have production plants and do very little selling in the region. Since so many companies are active in Europe, it is not surprising that a presence there is associated with only average growth for multinational companies.

What is surprising is the relationship between regional presence and profitability. It seems that Latin America stands out as the single region in which multinational firms enjoy above average profitability. This may be due to the fact that U.S. firms benefit—in terms of both margin and profitability—from local trade restrictions that are intended to protect domestic industries. Although the result is not so dramatic, Latin America is a region associated with above average profits even when industry effects are taken out (i.e., when an allowance is made for the difference in profits of industries and the distribution of industries across regions). If many Latin American countries follow

Chart 12: Multinational Firms With Global Strategies



Note: Based on all multinational firms in 1989. Shares do not add to 100 percent because a single firm can engage in more than one strategy.

Mexico's lead in reducing trade barriers either by joining, in some way, the forthcoming North American Free Trade Agreement (NAFTA) or by unilateral action, this profit advantage is likely to diminish.

Strategies and Alliances

Chart 12 shows the proportions of multinational manufacturers that have joint ventures, licensing agreements and R&D operations abroad. Joint ventures are the most common global strategy employed by multinationals and they are used by 40 percent of all firms. These firms account for 80 percent of total worldwide sales for multinational companies. About 35 percent of all firms engage in licensing arrangements, while 25 percent have R&D activities abroad.

Chart 13 illustrates the trade-off between growth and profitability in using joint ventures versus licenses. Multinational firms that use both approaches are more profitable than those that do not. Joint ventures appear to provide a modest edge, in terms of shareholder return, relative to licensing. Yet, by their nature, joint ventures limit growth potential, while licenses, although somewhat less profitable, are strongly tied to faster worldwide sales growth. Some firms, especially those which depend heavily on advantages from proprietary technology, shy away from both strategies. However, the most dramatic and clear link between superior performance and strategy is the incidence of R&D activity abroad. Growth rates and profit rates for multinational firms with overseas R&D are strikingly higher than for those without. Appendix Tables 10, 11 and 12 show the increase in both joint ventures, licensing arrangements, and foreign R&D activities for all 20 of the 2-digit SIC classes over the decade.

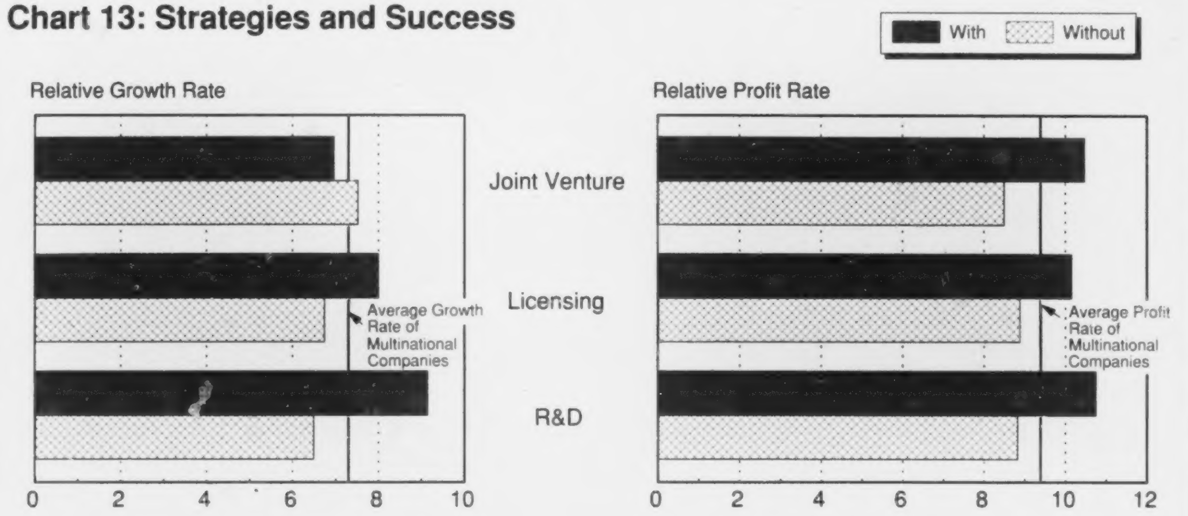
To realize high value means, in one sense, being a market leader. For most companies, it was sufficient to be in the top "one-third" of a market—defined by geography, product or client type. One of the ways that firms distinguish themselves to their clients is by providing quality products and services. The hallmark of successful manufacturers is that they define quality the way their customers do, rather than according to some internally generated standard.

What Do Outstanding Firms Do?

Much of the preceding analysis has focused on the differences in performance between multinational and domestic firms and among multinational firms alone. A different way of asking these strategic questions is to ask how outstanding firms differ from other firms.

"Outstanding firms" are defined here as firms that are in the top 20 percent in terms of both sustained profitability and growth over the decade. There are not many of them—only 37 in The Conference Board universe of companies. Although they are found in every 2-digit industry except textiles and apparel, almost one-half of these companies are in the machinery or electronics industry. Thirty out of the 37 companies—or about 80 percent—are multinational compared with 53 percent in the total Conference Board universe. In other words, the bias toward "global," or international operations, is overwhelming among outstanding firms.

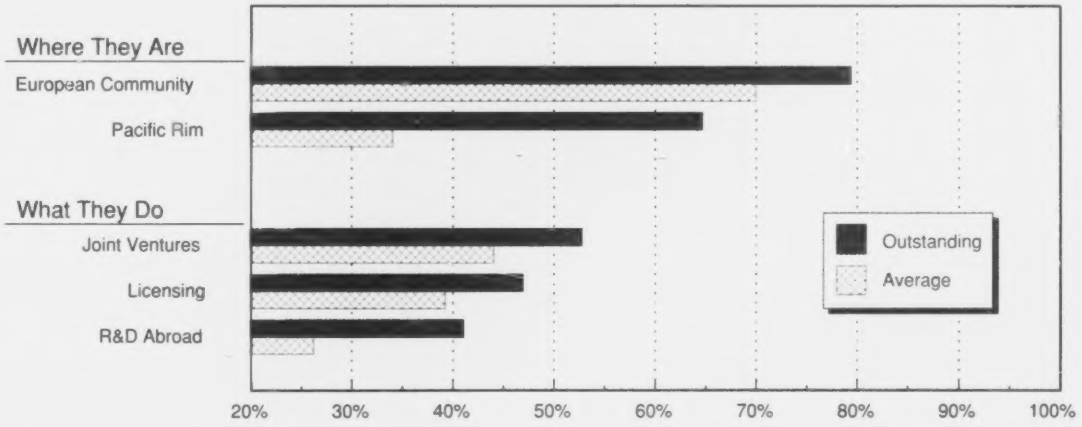
Chart 13: Strategies and Success



Note: The above chart is based on The Conference Board universe of all surviving companies in 1989.

Note: The above chart is based on all multinational firms.

Chart 14: What Outstanding Firms Do Differently



Note: Based on all firms in the top quintile of performance, both in terms of growth and profitability.

Outstanding firms typically have more product lines in more industries. They operate in three 3-digit SIC industries, compared with two for the average firm. This may be a function of size: worldwide sales for outstanding firms averaged $2.5 billion compared with an average of $1.4 billion for the universe as a whole.

Moreover, their market share is typically twice as large as the average firm. Ironically, they face more competitors than the average firm in the universe—an average of 47 at the 3-digit industry level in 1989, compared with 28 for The Conference Board population. Thus, while the average number of competitors has been cut in half for most firms since 1979, these companies do not appear to enjoy the same advantages of "fewness" as do other firms.

This apparent lack of "fewness" may occur for several reasons. First, these companies are in dynamic industries where profits and growth are high; therefore, they attract more competitors. Second, many of the firms are new industries with new technologies and are less mature. It may, therefore, also be more difficult to isolate or segment a particular market. Moreover, SIC definitions may be particularly ill-suited for defining market segments given the changing nature of the technology. Third, it may be that the 3-digit SIC industry level is simply too high a level of aggregation to capture *even the inference* of "fewness." There are, for example, 51 product classifications at the 4-digit level alone in the machinery industry and 37 in the electronics industry. Perhaps, at this level with still more refined SIC codes, truer measures of product markets ("fewness") would appear.

Chart 14 shows the regional and strategic characteristics for these firms. Particularly striking is the fact that these superior firms are twice as active in the Pacific Rim and are more active in Europe than the average multinational firm. An equally striking characteristic is that these firms are twice as likely to engage in R&D outside of the United States.

Looking Ahead

What are the implications for business? The experiences of U.S. manufacturing firms in The Conference Board universe show:

- **Survival is not assured.** Firms are likely to appear and disappear at a high rate as industries and markets evolve in the 1990s, as they have in the 1980s.

- **Technology is key to growth**. The industry groups where high technology is concentrated either in the production process or in the product itself have grown rapidly and are highly profitable relative to other firms.

- **Globalization pays.** Multinational firms are overwhelmingly the superior performers in terms of both growth and profitability; as a consequence, global presence is also important for long-term survival.

- **"Fewness" pays.** Profits rise as the number of competitors declines. This is due both to the natural evolution of markets and to the active strategies of corporations as they subdivide existing business segments and develop new ones. Some markets, such as electronics and communications, may offer commanding opportunities for growth and profitability, making it possible to succeed even with a relatively large number of competitors. However, closer examination of product markets would probably show that "fewness" pays here as well.

- **Engaging in R&D abroad pays.** Successful firms are more active than others in seeking out strategic alliances of all sorts; licenses, joint ventures or R&D. Yet, engaging in R&D abroad appears to have a particularly important payoff.

- **Dynamic regions lead to dynamic performance.** While trade barriers in some countries may protect margins in the near term, the preferred markets should be those that are growing the fastest, improving quality and technological standards rapidly, and/or are suitable to a particular marketing or product strategy. Successful multinational companies do not go everywhere at once. Developing a global presence is a gradual process, not a one-time event.

Implications for Government Policy

The superior performance and survival rate among multinational companies suggest that free trade across national borders is important to U.S. companies. Conversely, U.S. protectionism against foreign imports or investment would invite retaliation that would almost certainly endanger the better-performing U.S. manufacturers.

This study also strongly suggests that as the number of competitors in a given industry segment declines, the competitive environment becomes increasingly determined by the strategic decisions of other firms rather than the usual market forces of demand and price. If this is the case, any sort of intervention such as foreign government support, especially with new technology development, can create competitive advantages for foreign firms that make it very difficult for U.S. companies, acting individually, to respond effectively.

The corresponding policy prescription is far from clear. Domestic markets are highly dynamic as are global markets—as reflected in the substantial change in the composition of The Conference Board universe over the decade. Moreover, there are literally hundreds of thousands of small companies that lie outside this universe; they may someday become large companies. Therefore, policy should not be targeted in a way that might impair the process of growth and innovation or the process of structural change.

The 1990s

The analysis in this report is about what firms have done in the past. In the 1990s, the number of competitors in foreign markets will surely be even greater than in the 1980s, and international conditions may not favor globalization. Moreover, political stability—one impetus for globalization—may well diminish as old world order fragments. The future of GATT is also in question. The current round of negotiations is struggling to find consensus, and regionalism in North America, Europe and, arguably, the Pacific Rim is an increasingly attractive alternative to multilateralism.

To the extent that "going global" is more difficult in the future, issues of global access and technological advantage are a high priority. U.S. manufacturers, like their foreign competitors, must continue to specialize their products and to expand internationally in the face of uncertain barriers to trade and investment and stiffer international competition. There is every reason to believe that a global reach and focus in specific industries will remain key to superior performance in the future.

Statistical Appendix

Table 1. The Definition of 2-Digit Standard Industrial Classifications (SICs)

SIC #	*Industry*
20	Food and kindred products
21	Tobacco products
22	Textile mill products
23	Apparel and other textile products
24	Lumber and wood products, except furniture
25	Furniture and fixtures
26	Paper and allied products
27	Printing, publishing, and allied industries
28	Chemicals and allied products
29	Petroleum refining and related industries
30	Rubber and miscellaneous plastics products
31	Leather and leather products

SIC#	*Industry*
32	Stone, clay, glass and concrete products
33	Primary metal industries
34	Fabricated metal products, except machinery and transportation equipment
35	Industrial and commercial machinery and computer equipment
36	Electronic and other electrical equipment and components, except computer equipment
37	Transportation equipment
38	Measuring, analyzing, and controlling instruments; photographic, medical and optical goods; watches and clocks
39	Miscellaneous manufacturing industries

Table 2. The Definition of 3-Digit SICs

SIC#	*Industry*
201	Meat products
202	Dairy products
203	Canned, frozen and preserved fruits, vegetables and food specialties
204	Grain mill products
205	Bakery products
206	Sugar and confectionery products
207	Fats and oils
208	Beverages
209	Miscellaneous food preparations and kindred products
211	Cigarettes
212	Cigars
213	Chewing and smoking tobacco and snuff
214	Tobacco stemming and redrying
221	Broadwoven fabric mills, cotton
222	Broadwoven fabric mills, manmade fiber and silk
223	Broadwoven fabric mills, wool (including dyeing and finishing)
224	Narrow fabric and other smallwares mills: cotton, wool, silk, and manmade fiber
225	Knitting mills
226	Dyeing and finishing textiles, except wool fabrics and knit goods
227	Carpets and rugs
228	Yarn and thread mills
229	Miscellaneous textile goods
231	Men's and boys' suits, coats, and overcoats
232	Men's and boys' furnishings, work clothing and allied garments
233	Women's, misses' and juniors' outerwear
234	Women's, misses', children's, and infants' undergarments
235	Hats, caps, and millinery
236	Girls', children's, and infants' outerwear
237	Fur goods
238	Miscellaneous apparel and accessories
239	Miscellaneous fabricated textile products
241	Logging
242	Sawmills and planing mills
243	Millwork, veneer, plywood, and structural wood members
244	Wood containers
245	Wood buildings and mobile homes
249	Miscellaneous wood products
251	Household furniture
252	Office furniture
253	Public building and related furniture
254	Partitions, shelving, lockers, office and store fixtures
259	Miscellaneous furniture and fixtures
261	Pulp mills
262	Paper mills
263	Paperboard mills
265	Paperboard containers and boxes
267	Converted paper and paperboard products, except containers and boxes
271	Newspapers: publishing, or publishing and printing
272	Periodicals: publishing, or publishing and printing
273	Books
274	Miscellaneous publishing
275	Commercial printing
276	Manifold business forms
277	Greeting cards
278	Blankbooks, looseleaf binders, bookbinding, related work
279	Service industries for the printing trade
281	Industrial inorganic chemicals
282	Plastic materials and synthetic resins, synthetic rubber, cellulosic and other manmade fibers, except glass
283	Drugs
284	Soap, detergents, and cleaning preparations, perfumes, cosmetics, and other toilet preparations
285	Paints, varnishes, lacquers, enamels, and allied products
286	Industrial organic chemicals
287	Agricultural chemicals
289	Miscellaneous chemical products
291	Petroleum refining
295	Asphalt paving and roofing materials
299	Miscellaneous products of petroleum and coal
301	Tires and inner tubes
302	Rubber and plastics footwear
305	Gaskets, packing, and sealing devices, rubber and plastics hose and belting
306	Fabricated rubber products, not elsewhere classified
308	Miscellaneous plastics products
311	Leather tanning and finishing

SIC #	Industry
313	Boot and shoe cut stock and findings
314	Footwear, except rubber
315	Leather gloves and mittens
316	Luggage
317	Handbags and other personal leather goods
319	Leather goods, not elsewhere classified
321	Flat glass
322	Glass and glassware, pressed or blown
323	Glass products, made of purchased glass
324	Cement, hydraulic
325	Structural clay products
326	Pottery and related products
327	Concrete, gypsum, and plaster products
328	Cut stone and stone products
329	Abrasive, asbestos, and miscellaneous nonmetallic mineral products
331	Steel works, blast furnaces, and rolling and finishing mills
332	Iron and steel foundries
333	Primary smelting and refining of nonferrous metals
334	Secondary smelting, refining of nonferrous metals
335	Rolling, drawing, and extruding of nonferrous metals
336	Nonferrous foundries (castings)
339	Miscellaneous primary metal products
341	Metal cans and shipping containers
342	Cutlery, handtools, and general hardware
343	Heating equipment, except electric and warm air; and plumbing fixtures
344	Fabricated structural metal products
345	Screw machine products, and bolts, nuts, screws, rivets, and washers
346	Metal forgings and stampings
347	Coating, engraving, and allied services
348	Ordinance and accessories, except vehicles and guided missiles
349	Miscellaneous fabricated metal products
351	Engines and turbines
352	Farm and garden machinery and equipment
353	Construction, mining, and materials handling machinery and equipment
354	Metalworking machinery and equipment
355	Special industry machinery, except metalworking machinery
356	General industrial machinery and equipment
357	Computer and office equipment
358	Refrigeration and service industry machinery
359	Miscellaneous industrial and commercial machinery and equipment
361	Electric transmission and distribution equipment
362	Electrical industrial apparatus
363	Household appliances
364	Electric lighting and wiring equipment
365	Household audio and video equipment, and audio recordings
366	Communications equipment
367	Electronic components and accessories
369	Miscellaneous electrical machinery, equipment, and supplies
371	Motor vehicles and motor vehicle equipment
372	Aircraft and parts
373	Ship and boat building and repairing
374	Railroad equipment
375	Motorcycles, bicycles, and parts
376	Guided missiles and space vehicles and parts
379	Miscellaneous transportation equipment
381	Search, detection, navigation, guidance, aeronautical, and nautical systems, instruments and equipment
382	Laboratory apparatus and analytical, optical, measuring, and controlling instruments
384	Surgical, medical, and dental instruments and supplies
385	Ophthalmic goods
386	Photographic equipment and supplies
387	Watches, clocks, clockwork operated devices, and parts
391	Jewelry, silverware, and plated ware
393	Musical instruments
394	Dolls, toys, games and sporting and athletic goods
395	Pens, pencils, and other artists' materials
396	Costume jewelry, costume novelties, buttons, and miscellaneous notions, except precious metal
399	Miscellaneous manufacturing industries

Table 3: The Definition of Regions

Africa

- Algeria
- Andorra
- Angola
- Benin
- Botswana
- Burkina Faso
- Burundi
- Cameroon
- Cape Verde
- Chad
- Comoros Islands
- Congo
- Guinea
- Ethiopa
- Gabon
- Gambia
- Ghana
- Guinea
- Guinea-Bissau
- Ivory Coast
- Kenya
- Lesotho
- Liberia
- Libya
- Malagasy Republic
- Malawi
- Mali
- Mauritania
- Mauritius
- Morocco
- Mozambique
- Niger
- Nigeria
- Rwanda
- San Marino
- Sao Tome/ Principe
- Senegal
- Seychelles
- Sierra Leone
- Somalia
- South Africa
- Sudan
- Swaziland
- Tanzania
- Togo
- Tunisia
- Uganda
- Zaire
- Zambia
- Zimbabwe
- Central African Republic

COMECON*

- Albania
- Bulgaria
- Czechoslovakia
- East Germany
- Hungary
- Poland
- Romania
- USSR
- Yugoslavia

EFTA**

- Finland
- Iceland
- Norway
- Sweden
- Switzerland

Latin America

- Argentina
- Bahamas
- Barbados
- Bolivia
- Brazil
- Chile
- Colombia
- Costa Rica
- Cuba
- Dominican Republic
- El Salvador
- Ecuador
- French Guiana
- Grenada
- Guadaloupe
- Guatemala
- Guyana
- Haiti
- Honduras
- Jamaica
- Martinique
- Netherlands Antilles
- Nicaragua
- Panama
- Paraguay
- Peru
- Surinam
- Trinidad/Tobago
- Uruguay
- Venezuela
- West Indies

Other

- Borneo
- Fiji
- Guam
- Nauru
- New Caledonia
- New Guinea
- Papua New Guinea
- China (PRC)
- Tahiti
- Tongo
- Western Samoa
- Cyprus
- Malta
- Mongolia
- North Korea

Pacific Rim

- Australia
- Indonesia
- Japan
- Malaysia
- New Zealand
- Philippines
- Thailand
- China (Taiwan)
- Hong Kong
- Singapore
- South Korea

North America

- Canada
- Mexico

European Community**

- Austria
- Belgium
- Denmark
- France
- Greece
- Ireland
- Italy
- Liechtenstein
- Luxembourg
- Monaco
- Netherlands
- Portugal
- Spain
- United Kingdom
- West Germany

South Asia

- Afghanistan
- Bangladesh
- Bhutan
- India
- Kampuchea
- Laos
- Maldives
- Myanmar (formerly Burma)
- Nepal
- Pakistan
- Sri Lanka
- Vietnam

Middle East

- Yemen
- Bahrain
- Egypt
- Iran
- Iraq
- Israel
- Jordan
- Kuwait
- Lebanon
- Oman
- Yemen (PDR)
- Qatar
- Saudi Arabia
- Syria
- Turkey
- United Arab Emirates

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* COMECON is the Council for Mutual Economic Assistance, a trade and economic organization formed by the Soviet Union and Eastern Bloc countries in 1949, that was dissolved in 1990.

** Monaco, Liechtenstein and Austria have been included in their European Community (EC) region and Switzerland in the European Free Trade Area (EFTA) region for the sake of completeness in the coverage.

Table 4. Home and Abroad: Distribution of Multinational and Domestic Firms by Industry

			Domestic		Multinational	
SIC #	*Industry*	*Total*	*Number of Companies*	*As Percent of Total*	*Number of Companies*	*As Percent of Total*
20	Food and kindred products	88	39	44.3	49	55.7
21	Tobacco products	6	2	33.3	4	66.7
22	Textile mill products	62	34	54.8	28	45.2
23	Apparel and other textile products	51	29	56.9	22	43.1
24	Lumber and wood products	64	28	43.8	36	56.3
25	Furniture and fixtures	57	27	47.4	30	52.6
26	Paper and allied products	56	22	39.3	34	60.7
27	Printing and publishing	63	37	58.7	26	41.3
28	Chemicals and allied products	199	49	24.6	150	75.4
29	Petroleum refining and coal products	43	18	41.9	25	58.1
30	Rubber and misc. plastics products	116	47	40.5	69	59.5
31	Leather and leather products	34	19	55.9	15	44.1
32	Stone, clay and glass products	86	38	44.2	48	55.8
33	Primary metal industries	111	46	41.4	65	58.6
34	Fabricated metal products	233	88	37.8	145	62.2
35	Machinery, except electrical	447	152	34.0	295	66.0
36	Electric and electronic equipment	359	142	39.6	217	60.4
37	Transportation equipment	147	51	34.7	96	65.3
38	Instruments and related products	241	92	38.2	149	61.8
39	Misc. manufacturing industries	87	31	35.6	56	64.4
Total firms in Conference Board universe		1,490	704		786	

Note: Number of companies shown in Columns 1, 2 and 4 do not add to grand totals shown above because firms are listed within several different industrial classifications and therefore appear more than once.

Table 5. The Shifting Composition of American Industry: Distribution of Worldwide Sales and Number of Companies, 1979 and 1989

		Companies				*Worldwide Sales*			
		1979		*1989*		*1979*		*1989*	
SIC #	*Industry*	*Number*	*Share of Total**	*Number*	*Share of Total**	*($000)*	*Share of Total*	*($000)*	*Share of Total*
20	Food and kindred products	323	16.8	88	5.9	167,800	9.6	172,959	8.0
21	Tobacco products	26	1.4	6	0.4	9,361	0.5	31,624	1.5
22	Textile mill products	220	11.4	62	4.2	26,736	1.5	30,347	1.4
23	Apparel and other textile products	198	10.3	51	3.4	28,871	1.7	14,417	0.7
24	Lumber and wood products	163	8.5	64	4.3	30,224	1.7	52,992	2.5
25	Furniture and fixtures	169	8.8	57	3.8	16,003	0.9	10,377	0.5
26	Paper and allied products	191	9.9	56	3.8	54,614	3.1	64,831	3.0
27	Printing and publishing	200	10.4	63	4.2	41,148	2.4	42,526	2.0
28	Chemicals and allied products	423	22.0	199	13.4	201,653	11.6	340,225	15.7
29	Petroleum refining and coal products	99	5.1	43	2.9	272,349	15.6	205,363	9.5
30	Rubber and misc. plastics products	314	16.3	116	7.8	78,874	4.5	74,708	3.5
31	Leather and leather products	68	3.5	34	2.3	10,279	0.6	10,299	0.5
32	Stone, clay and glass products	210	10.9	86	5.8	38,269	2.2	37,773	1.7
33	Primary metal industries	299	15.5	111	7.4	86,004	4.9	46,916	2.2
34	Fabricated metal products	557	29.0	233	15.6	97,185	5.6	89,945	4.2
35	Machinery, except electrical	740	38.5	447	30.0	169,473	9.7	308,872	14.3
36	Electric and electronic equipment	572	29.7	359	24.1	136,949	7.9	270,775	12.5
37	Transportation equipment	315	16.4	147	9.9	174,378	10.0	198,912	9.2
38	Instruments and related products	351	18.2	241	16.2	66,682	3.8	105,655	4.9
39	Misc. manufacturing industries	233	12.1	87	5.8	35,692	2.0	52,397	2.4
Total reporting industry activity		*1,924*	*n.a.*	*1,490*	*n.a.*	*1,742,546*	*100.0*	*2,161,911*	*100.0*

Note: Columns do not add to grand totals shown above because firms are listed within several different industrial classifications and therefore appear more than once.

* Share represents the percent of companies active in the industry.

n.a. Not applicable.

Table 6. Where Companies Were and Are: Distribution of the Number of Companies and Sales by Region, 1979 and 1989

	Companies Reporting Country Activity				*Worldwide Sales*			
	1979		*1989*		*1979*		*1989*	
Region	*Number*	*Share of Firms Active in Region*	*Number*	*Share of Firms Active in Region*	*($000)*	*Share*	*($000)*	*Share*
European Community	856	65.6	479	71.6	584,092	36.9	778,335	41.5
Latin America	386	29.6	184	27.5	221,822	14.0	265,269	14.1
North America	928	71.2	414	61.9	451,405	28.5	380,415	20.3
Pacific Rim	410	31.4	273	40.8	183,993	11.6	304,140	16.2
Other	248	19.0	155	23.2	140,959	8.9	148,956	7.9
Total reporting country activity	*1,304*	*n.a.*	*669*	*n.a.*	*1,582,271*		*1,877,114*	

Note: United States is not included in North America. Here, "other" includes COMECON, EFTA, the Middle East and South Asia (see Table 3). The share of firms active in each region is defined as the number of firms that report activity in one or more countries in that region, expressed as a percent of the total number of firms that report their activity by country. Companies include those that have exports, joint ventures or other foreign alliances as well as multinational firms that have foreign sales and plants. Numbers in columns do not add to grand totals shown above because firms are listed in several different countries and may therefore appear more than once.

n.a. Not applicable.

Table 7. "Fewness": Change in the Average Number of Firms Active in Each Industry

SIC #	Industry	Total 1979	 1989
20	Food and kindred products	58.0	24.0
21	Tobacco products	8.8	3.0
22	Textile mill products	38.4	10.7
23	Apparel and other textile products	31.1	14.4
24	Lumber and wood products	36.3	17.8
25	Furniture and fixtures	41.6	16.0
26	Paper and allied products	49.2	17.7
27	Printing and publishing	31.7	13.0
28	Chemicals and allied products	91.5	47.9
29	Petroleum refining and coal products	37.7	17.7
30	Rubber and misc. plastics products	62.8	34.8
31	Leather and leather products	10.9	6.1
32	Stone, clay and glass products	30.0	13.6
33	Primary metal industries	55.7	23.3
34	Fabricated metal products	87.1	38.9
35	Machinery, except electrical	126.6	75.1
36	Electric and electronic equipment	113.5	71.3
37	Transportation equipment	58.9	27.3
38	Instruments and related products	65.1	46.6
39	Misc. manufacturing industries	43.7	17.2
	Weighted average	*52.8*	*28.2*

Note: This table shows the average number of U.S. competitors in each three-digit SIC classification aggregated to the two-digit level. Data shown for all companies in The Conference Board universe.

Table 8. Average Profit Rates for Domestic and Multinational Firms by Industry

SIC #	Industry	All	Domestic	Multinational
20	Food and kindred products	14.6%	13.3%	15.2%
21	Tobacco products	9.0	5.9	10.6
22	Textile mill products	10.0	8.9	10.9
23	Apparel and other textile products	10.9	8.5	13.3
24	Lumber and wood products	9.5	6.5	11.3
25	Furniture and fixtures	11.4	8.6	13.6
26	Paper and allied products	12.5	13.1	12.2
27	Printing and publishing	15.0	16.6	12.9
28	Chemicals and allied products	11.0	8.6	11.6
29	Petroleum refining and coal products	8.2	5.7	9.2
30	Rubber and misc. plastics products	9.9	8.0	10.7
31	Leather and leather products	12.8	11.6	13.7
32	Stone, clay and glass products	9.1	10.1	8.5
33	Primary metal industries	7.6	8.0	7.3
34	Fabricated metal products	7.4	5.7	8.2
35	Machinery, except electrical	6.8	2.7	8.5
36	Electric and electronic equipment	6.4	3.7	7.9
37	Transportation equipment	8.3	8.0	8.4
38	Instruments and related products	7.8	6.2	8.7
39	Misc. manufacturing industries	10.0	6.2	11.7
	Weighted average	*8.5*	*7.1*	*9.4*

Note: Profit is defined as the return on total assets averaged for the 1986 to 1990 period.

Table 9. Average Annual Growth in Worldwide Sales for Domestic and Multinational Firms by Industry, 1979 to 1989

SIC #	*Industry*	*All*	*Domestic*	*Multinational*
20	Food and kindred products	6.4%	4.1%	7.6%
21	Tobacco products	10.5	6.7	13.0
22	Textile mill products	5.0	1.2	8.7
23	Apparel and other textile products	6.3	5.1	7.3
24	Lumber and wood products	8.0	7.2	8.5
25	Furniture and fixtures	8.4	5.6	10.4
26	Paper and allied products	8.9	7.8	9.6
27	Printing and publishing	8.4	8.3	8.5
28	Chemicals and allied products	6.1	1.8	6.8
29	Petroleum refining and coal products	0.9	-3.8	3.5
30	Rubber and misc. plastics products	6.4	3.4	8.0
31	Leather and leather products	4.7	2.8	5.7
32	Stone, clay and glass products	4.3	5.4	3.7
33	Primary metal industries	4.4	2.3	5.3
34	Fabricated metal products	5.0	3.3	5.8
35	Machinery, except electrical	6.2	3.6	6.9
36	Electric and electronic equipment	7.2	3.8	8.4
37	Transportation equipment	5.1	4.2	5.4
38	Instruments and related products	7.9	5.7	8.3
39	Misc. manufacturing industries	7.3	4.8	8.0
Weighted average		*8.4*	*5.5*	*8.8*

Note: Data are based on firms in 1979 that survived under same corporate identity in 1989.

Table 10. Proportion of Multinational Firms Using Joint Ventures by Industry, 1979 and 1989

		1979			1989		
SIC #	*Industry*	*No. of Companies*	*No. with Joint Ventures*	*As % of Total*	*No. of Companies*	*No. with Joint Ventures*	*As % of Total*
20	Food and kindred products	131	45	34.4	49	30	61.2
21	Tobacco products	14	4	28.6	4	4	100.0
22	Textile mill products	96	29	30.2	28	13	46.4
23	Apparel and other textile products	89	23	25.8	22	5	22.7
24	Lumber and wood products	65	16	24.6	36	19	52.8
25	Furniture and fixtures	75	24	32.0	30	10	33.3
26	Paper and allied products	98	38	38.8	34	18	52.9
27	Printing and publishing	92	23	25.0	26	8	30.8
28	Chemicals and allied products	254	103	40.6	150	86	57.3
29	Petroleum refining and coal products	54	24	44.4	25	18	72.0
30	Rubber and misc. plastics products	170	66	38.8	69	32	46.4
31	Leather and leather products	30	7	23.3	15	5	33.3
32	Stone, clay and glass products	110	40	36.4	48	25	52.1
33	Primary metal industries	147	69	46.9	65	31	47.7
34	Fabricated metal products	299	100	33.4	145	64	44.1
35	Machinery, except electrical	439	130	29.6	295	122	41.4
36	Electric and electronic equipment	334	81	24.3	217	82	37.8
37	Transportation equipment	171	54	31.6	96	50	52.1
38	Instruments and related products	219	70	32.0	149	60	40.3
39	Misc. manufacturing industries	130	38	29.2	56	25	44.6
Weighted average		*n.a.*	*n.a.*	*31.3*	*n.a.*	*n.a.*	*40.1*

Note: Based on The Conference Board universe of all multinational companies. *n.a.* Not applicable.

Table 11. Proportion of Multinational Firms Using Licensing Agreements by Industry, 1979 and 1989

		1979			1989		
SIC #	*Industry*	*No. of Companies*	*No. with Licensing Agmts.*	*As % of Total*	*No. of Companies*	*No. with Licensing Agmts.*	*As % of Total*
20	Food and kindred products	131	21	16.0	49	24	49.0
21	Tobacco products	14	3	21.4	4	2	50.0
22	Textile mill products	96	13	13.5	28	12	42.9
23	Apparel and other textile products	89	15	16.9	22	8	36.4
24	Lumber and wood products	65	9	13.8	36	11	30.6
25	Furniture and fixtures	75	9	12.0	30	11	36.7
26	Paper and allied products	98	15	15.3	34	13	38.2
27	Printing and publishing	92	14	15.2	26	5	19.2
28	Chemicals and allied products	254	38	15.0	150	74	49.3
29	Petroleum refining and coal products	54	9	16.7	25	13	52.0
30	Rubber and misc. plastics products	170	32	18.8	69	33	47.8

Table 11 (continued)

		1979			1989		
SIC #	*Industry*	*No. of Companies*	*No. with Licensing Agmts.*	*As % of Total*	*No. of Companies*	*No. with Licensing Agmts.*	*As % of Total*
31	Leather and leather products	30	5	16.7	15	8	53.3
32	Stone, clay and glass products	110	17	15.5	48	16	33.3
33	Primary metal industries	147	32	21.8	65	19	29.2
34	Fabricated metal products	299	40	13.4	145	44	30.3
35	Machinery, except electrical	439	63	14.4	295	107	36.3
36	Electric and electronic equipment	334	41	12.3	217	63	29.0
37	Transportation equipment	171	28	16.4	96	44	45.8
38	Instruments and related products	219	20	9.1	149	57	38.3
39	Misc. manufacturing industries	130	19	14.6	56	25	44.6
Weighted average		*n.a.*	*n.a.*	*13.4*	*n.a.*	*n.a.*	*34.7*

Note: Based on The Conference Board universe of all multinational companies. *n.a.* Not applicable.

Table 12. Proportion of Multinational Firms Engaged in R&D Abroad by Industry, 1979 and 1989

		1979			1989		
SIC #	*Industry*	*No. of Companies*	*No. with R&D*	*As % of Total*	*No. of Companies*	*No. with R&D*	*As % of Total*
20	Food and kindred products	131	7	5.3	49	17	34.7
21	Tobacco products	14	0	0.0	4	2	50.0
22	Textile mill products	96	6	6.3	28	6	21.4
23	Apparel and other textile products	89	4	4.5	22	3	13.6
24	Lumber and wood products	65	1	1.5	36	10	27.8
25	Furniture and fixtures	75	0	0.0	30	2	6.7
26	Paper and allied products	98	3	3.1	34	7	20.6
27	Printing and publishing	92	3	3.3	26	3	11.5
28	Chemicals and allied products	254	28	11.0	150	69	46.0
29	Petroleum refining and coal products	54	3	5.6	25	8	32.0
30	Rubber and misc. plastics products	170	13	7.6	69	17	24.6
31	Leather and leather products	30	1	3.3	15	4	26.7
32	Stone, clay and glass products	110	6	5.5	48	12	25.0
33	Primary metal industries	147	7	4.8	65	14	21.5
34	Fabricated metal products	299	7	2.3	145	31	21.4
35	Machinery, except electrical	439	5	1.1	295	80	27.1
36	Electric and electronic equipment	334	10	3.0	217	49	22.6
37	Transportation equipment	171	4	2.3	96	28	29.2
38	Instruments and related products	219	8	3.7	149	45	30.2
39	Misc. manufacturing industries	130	2	1.5	56	14	25.0
Weighted average		*n.a.*	*n.a.*	*3.7*	*n.a.*	*n.a.*	*25.6*

Note: Based on The Conference Board universe of all multinational companies. *n.a.* Not applicable.

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